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TRAFFIC SPEED REPORT No. 89

DECEMBER 1971 - NUMBER 22

BY

W. LAW

G. K. STAFFORD

W. B. LUTTRELL

NO. 22
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JHRP

JOINT HIGHWAY RESEARCH PROJECT
PURDUE UNIVERSITY AND
INDIANA STATE HIGHWAY COMMISSION

TRAFFIC SPEED REPORT NO. 89

TO: J. F. McLaughlin, Director
Joint Highway Research Project

December 28, 1971

File: 8-3-3

FROM: H. L. Michael, Associate Director
Joint Highway Research Project

Project: C-36-10C

The attached Progress Report No. 89 on Traffic Speeds is the report of the 1971 study of free-flowing automobile and truck speeds on rural, tangent, level sections of Interstate, 4-lane and 2-lane highways in Indiana. The report has been prepared by Mr. W. K. Law, a Graduate Instructor in Research on our staff, under the direction of Professor H. L. Michael. The data were collected by Messrs. G. K. Stafford and Bronson Luttrell of our staff.

The results indicate a decrease of 0.60 mph in the average speed of all passenger cars and an increase of 0.37 mph for heavy trucks to that of the 1970 study. A simple linear regression analysis over the last eleven years indicated that there has been an increasing trend in speed for most classifications of vehicles and highways of between 0.5 and 1.0 mph per year. Speed values for the past few years, however, indicate that the increasing trend for that period may not have been as great.

Copies of this report are requested for release to the Indiana State Police, the Indiana Traffic Safety Council and the Indiana Office of Traffic Safety as is normal procedure for these reports. Copies will also be sent to the Bureau of Public Roads and several departments within the ISHC. The report is presented for the record and for release as noted.

Respectfully submitted,

Harold L. Michael

HLM:ms

Harold L. Michael
Associate Director

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Progress Report

TRAFFIC SPEED REPORT NO. 89

by

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Joint Highway Research Project

File No.: 8-3-3

Project No.: C-36-10C

Purdue University
Lafayette, Indiana
December 28, 1971

ABSTRACT

This report is the annual continuing study of the speeds of vehicles on rural Indiana highways. Observations of spot speeds were taken on interstate, four-lane, and two-lane highways throughout the state during the months of June, July and August, 1971.

Analysis of the speeds showed the overall average speed for passenger cars was 64.9 miles per hour. The overall average speed for trucks was 57.9 miles per hour. This was 0.60 mph less for passenger cars and 0.37 miles more for trucks than similar data given for 1970 at the same locations.

TRAFFIC SPEED REPORT NO. 89

This report is an analysis of spot speed observations made during June, July and August 1971. All observations were made of free-flowing vehicles on level, tangent sections of rural Indiana highways during daylight and under favorable conditions. The same locations on selected Federal and State highways as used in 1970 were used again. Except for Station 9, these locations have been the same for many years and for 1971 were the same everywhere as for 1970. Stations were classified as two-lane, four-lane, or interstate highways. A representative sample of spot speeds was obtained at each of the four stations in each classification. The site locations were as follows: (See Figure A)

		Interstate Highways
1.	I-69	3.3 miles south of Junction of SR 18
2.	I-65	1.0 mile west of Junction of SR 334
3.	I-74	1.0 mile east of Junction of Post Road
4.	I-65	7.5 miles north of Junction of SR 160
		Four Lane Highways
5.	U.S. 31	1.2 miles south of Junction of SR 38
6.	U.S. 52	1.0 mile east of Junction of SR 28
7.	U.S. 41	1.0 mile north of South Junction of SR 2
8.	U.S. 52	1.0 mile west of Klondike
		Two Lane Highways
9.	U.S. 35	1.5 miles east of Junction of I-69
10.	S.R. 43	2.0 miles south of Chalmers
11.	U.S. 31	3.0 miles south of Rochester
12.	S.R. 25	0.7 miles west of Americus

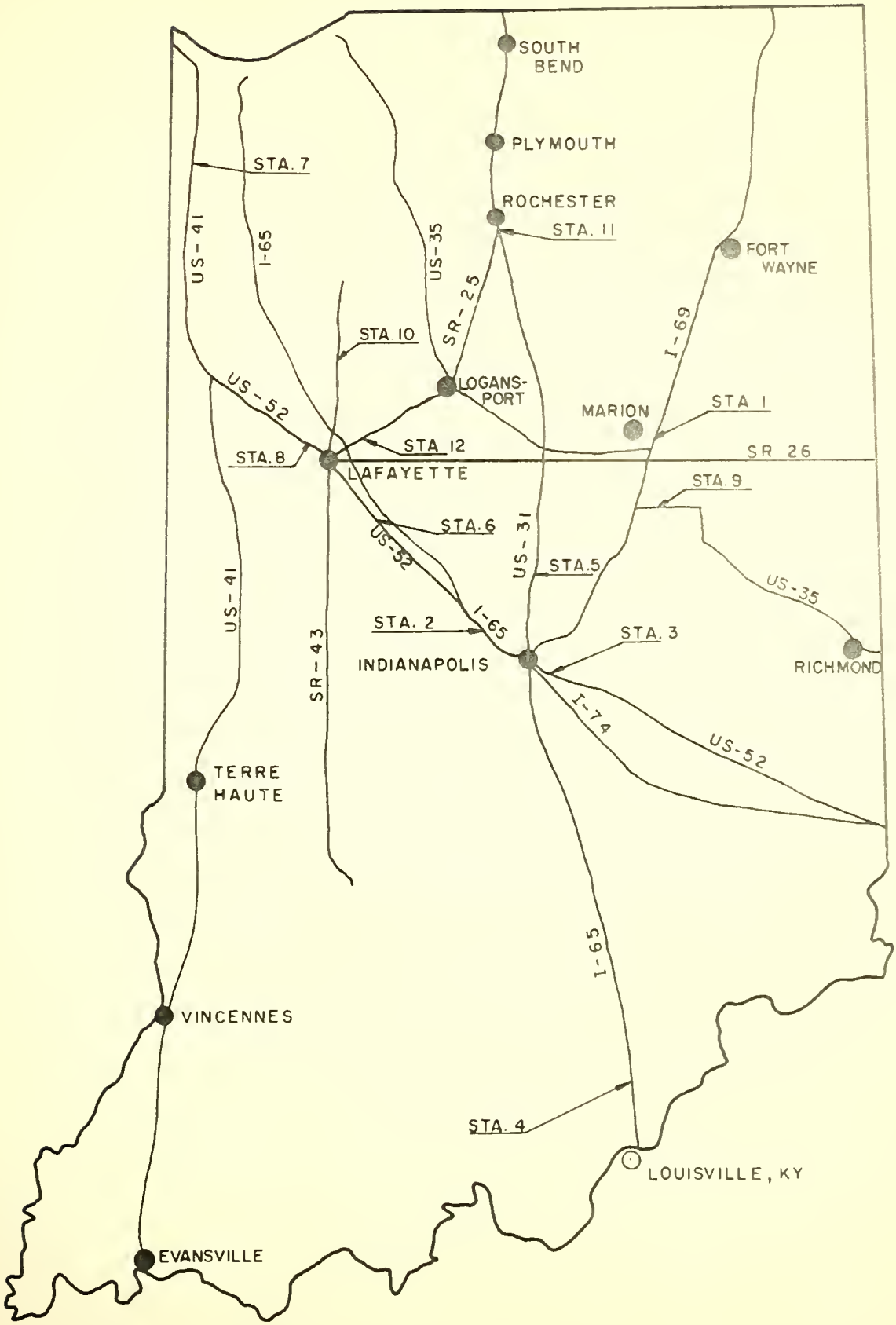


FIG. A - LOCATIONS OF SPEED-STUDY STATIONS

The vehicles were classified as Indiana or Non-Indiana Passenger Cars and Light (less than 5000 lbs. gross weight) or Heavy (equal to or more than 5000 lbs. gross weight) Trucks. The analysis was performed as classified and combined, passenger cars or trucks.

The maximum speed limits in Indiana are as follows: 70 miles per hour on interstate highways and 65 miles per hour on other rural highways unless otherwise posted. The stated limits were applicable at all stations of this study.

Equipment and Field Procedure

The observations for this study were obtained by use of an "Electromatic" Radar Speed Meter. The meter was placed approximately four feet from the edge of the pavement at angles less than 10° with the highway center line. No corrections of speeds were necessary at these small angles. At the beginning of the study the accuracy of the meter was checked and any constant discrepancy of readings was corrected accordingly.

Results of Analysis

The data collected were analyzed and are summarized in Tables 1 to 12 in the Appendix. Tables 13, 14, and 15 summarize the data for interstate, four lane, and two lane highways, respectively. Table 16 is the summary for all highways.

Figures 1 to 16 in the Appendix show the accumulative speed curves for each of the stations studied and the combined curves for the three types of highways and all highways observed.

The average speed for each classification of vehicles on each type of highway for this study was as follows:

	Interstate	Four Lane	Two Lane
Passenger Cars:			
Indiana	68.3	64.3	61.4
Non-Indiana	68.7	65.4	60.9
85 Percentile (all)	73.7	70.7	68.0
Trucks:			
Less than 5000 lbs.	64.8	59.8	58.0
5000 lbs or more	59.4	56.4	54.0

The percent of vehicles exceeding the speed limit for each classification of vehicle and each type of highway was as follows:

	Interstate	Four Lane	Two Lane
Passenger Cars:			
Indiana	37.9	44.3	26.2
Non-Indiana	40.9	48.8	21.0
Trucks:			
Less than 5000 lbs.	24.3	24.8	12.4
5000 lbs or more	1.9	4.9	2.7

The percent of vehicles traveling 5 mph or more above the speed limit for each case was as follows:

	Interstate	Four Lane	Two Lane
Passenger Cars:			
Indiana	9.4	6.5	10.0
Non-Indiana	7.8	4.2	5.7
Trucks:			
Less than 5000 lbs.	4.5	5.0	5.1
5000 lbs or more	0.0	0.0	0.8

The results of this study and similar studies conducted since 1961 are tabulated in Table A. A simple linear regression analysis on these results was conducted and a summary is given in Table B.

A linear relationship between speeds and year was assumed with B the estimated slope of the straight line. Three hypotheses were tested - $\beta = 0.5$, $\beta = 1.0$, and $\beta = 1.5$ - in order to place values on the annual trends. It was found that an increase of a 1.0 mph/year trend existed for all except two cases at the 95% confidence level. The two exceptions were 4-lane and 2-lane heavy truck's 15-percentile speeds which showed a 0.5 mph/year trend.

A graphical representation of Tables A and B is given in Figure B.

TABLE A

SUMMARY OF SPOT SPEED OBSERVATION ON INDIANA HIGHWAYS

(Free-Moving Vehicles on Level, Tangent Sections)

		Passenger Cars				Trucks		
		Ind. Mean	Non-Ind. Mean	All Mean	All 85%	Light Mean	Heavy Mean	All Mean
Two-Lane Highways								
Aug.	'61	56.2	55.7	55.9	62.2	50.4	48.9	49.3
Aug.	'62	56.7	57.5	57.0	63.7	53.1	49.3	50.1
June	'63	56.9	57.7	57.2	64.0	52.3	47.9	49.7
July	'64	59.1	60.1	59.5	66.6	53.9	51.7	52.4
Sept.	'65	58.2	57.9	58.1	64.6	54.3	50.6	51.7
Sept.	'66	60.1	59.5	59.9	65.5	55.4	50.8	52.0
Aug.	'67	61.0	61.9	61.3	68.0	53.8	51.9	52.7
June	'68	61.2	62.4	61.5	68.1	54.4	54.2	54.3
July	'69	64.7	64.6	64.7	71.9	60.5	55.9	57.9
July	'70	62.3	62.8	62.3	68.9	59.0	54.8	56.7
July	'71	61.4	60.9	61.3	68.0	58.0	54.0	55.6
Four-Lane Highways								
Aug.	'61	57.6	57.6	57.6	63.5	53.6	50.3	51.0
Aug.	'62	59.2	59.3	59.2	65.8	54.7	51.3	51.9
June	'63	60.4	60.6	60.5	66.3	55.0	48.6	51.3
July	'64	61.3	63.0	62.0	69.4	55.1	54.5	54.7
Sept.	'65	60.1	62.2	61.0	67.2	55.5	53.1	53.7
Sept.	'66	63.1	64.3	63.5	69.0	58.7	52.8	54.2
Aug.	'67	64.3	65.7	65.0	70.3	57.0	54.0	54.9
June	'68	64.2	66.2	64.9	70.4	58.4	55.4	56.2
July	'69	67.7	68.3	67.9	74.6	64.0	58.0	59.6
July	'70	64.6	64.3	64.5	70.6	59.7	55.0	54.2
July	'71	64.3	65.4	64.7	70.7	59.8	56.4	57.4
Interstate Highways								
Aug.	'61*	56.7	56.9	58.2	64.0	55.9	51.5	52.4
Aug.	'62	58.7	59.1	58.8	65.6	55.8	52.7	53.2
June	'63	59.7	61.2	60.3	66.3	55.2	51.5	52.7
July	'64	61.9	64.0	62.7	70.5	56.8	54.6	55.2
Sept.	'65	61.2	62.1	61.5	67.7	54.9	53.6	53.9
Sept.	'66	62.1	63.3	62.5	68.5	56.1	54.9	55.3
Aug.	'67	66.4	68.3	67.1	73.6	60.0	56.9	57.5
June	'68	66.2	67.9	66.8	72.4	60.5	57.9	58.5
July	'69	70.2	71.2	70.6	76.6	65.3	59.9	61.4
July	'70	69.1	69.2	69.2	74.6	63.8	59.6	60.5
July	'71	68.3	68.7	68.5	73.7	64.8	59.4	60.8
All Highways								
Aug.	'61	56.9	56.7	57.3	63.4	53.1	50.3	51.0
Aug.	'62	58.2	58.7	58.4	65.1	54.5	51.2	51.8
June	'63	59.0	59.9	59.3	65.2	54.1	49.5	51.2
July	'64	60.8	62.4	61.5	69.2	55.2	53.7	54.1
Sept.	'65	59.9	60.9	60.3	66.7	54.9	52.6	53.1
Sept.	'66	61.8	62.4	62.0	68.0	56.7	52.7	53.8
Aug.	'67	63.9	65.8	64.5	71.4	56.3	54.6	55.1
June	'68	63.8	66.0	64.5	70.8	57.2	56.2	56.5
July	'69	67.3	68.8	67.9	75.1	62.7	57.9	59.5
July	'70	65.1	66.3	65.5	72.2	60.3	56.4	57.5
July	'71	64.3	66.2	64.9	71.9	60.3	56.8	57.9

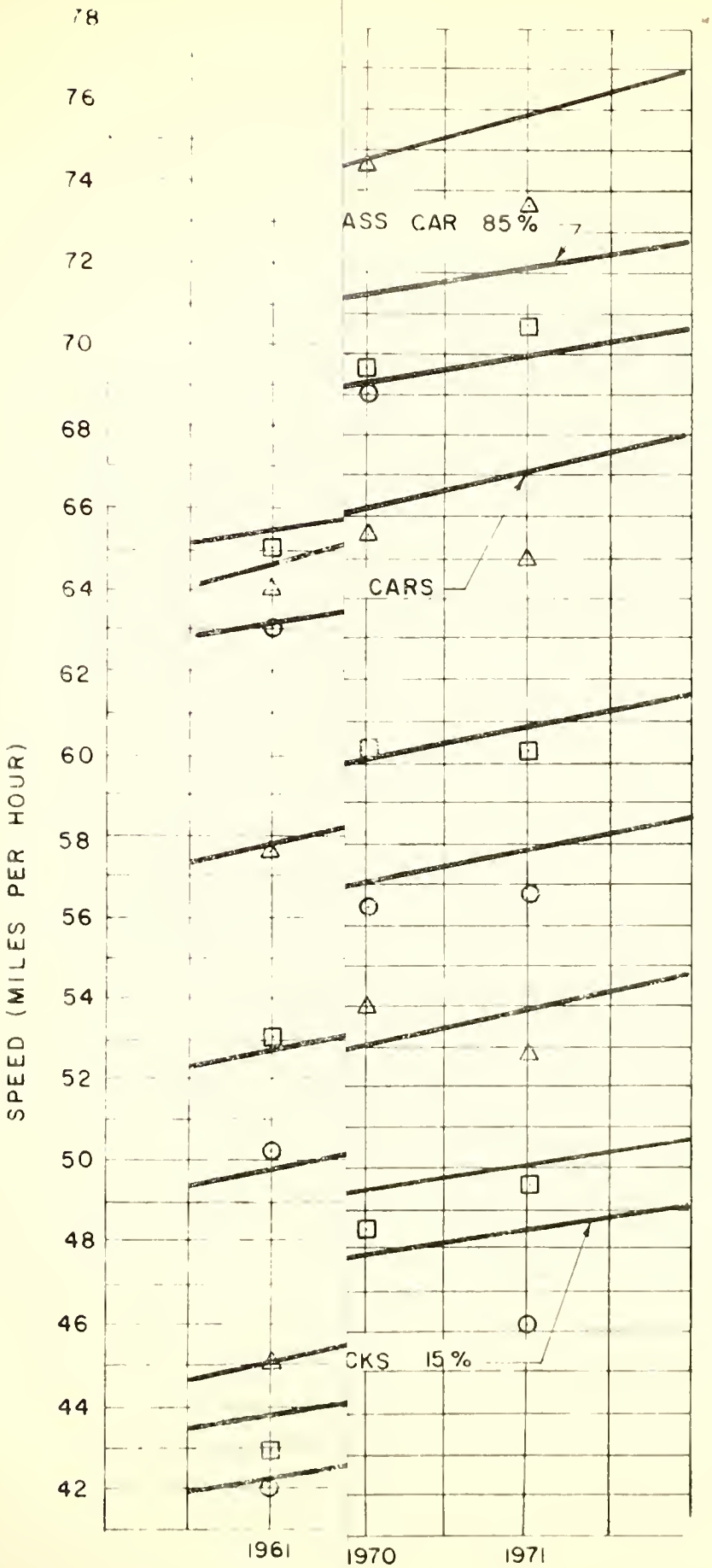
*Data was only for 3 stations on Interstate Highways.

TABLE B. SUMMARY OF LINEAR REGRESSION ANALYSIS

Classification	No. of Observ.	b_o	b_1	R^2	S_{b1}	β_{10} = 0.5	1.0	1.5
Interstate Passenger Cars 85%	11	-4.74	1.137	.823	.176	Rej	NR	NR
4 Lanes Passenger Cars 85%	11	24.85	.667	.617	.175	NR	NR	Rej
2 Lanes Passenger Cars 85%	11	20.80	.694	.722	.144	NR	NR	Rej
Mean of All Passenger Cars	11	1.81	.918	.848	.130	Rej	NR	Rej
Mean of All Light Trucks	11	2.61	.822	.806	.134	Rej	NR	Rej
Mean of All Heavy Trucks	11	2.51	.777	.840	.113	Rej	NR	Rej
Interstate Heavy Trucks 15%	11	-9.53	.895	.894	.103	Rej	NR	Rej
4 Lanes Heavy Trucks 15%	11	5.50	.628	.679	.144	NR	Rej	Rej
2 Lanes Heavy Trucks 15%	11	4.16	.623	.693	.138	NR	Rej	Rej

*All tests @ 5% Level of Significance; $H_o = \beta_1 = \beta_{10}$; $t = \frac{b_1 - \beta_{10}}{s_{b1}}$;Rejection Region: $|t| \geq t(0.975,9)$;

Rej = H_o rejected; NR = H_o not rejected.


78
76
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42
SPEED (MILES PER HOUR)
ASS CAR 85%
CARS
CKS 15%
1961
1970
1971

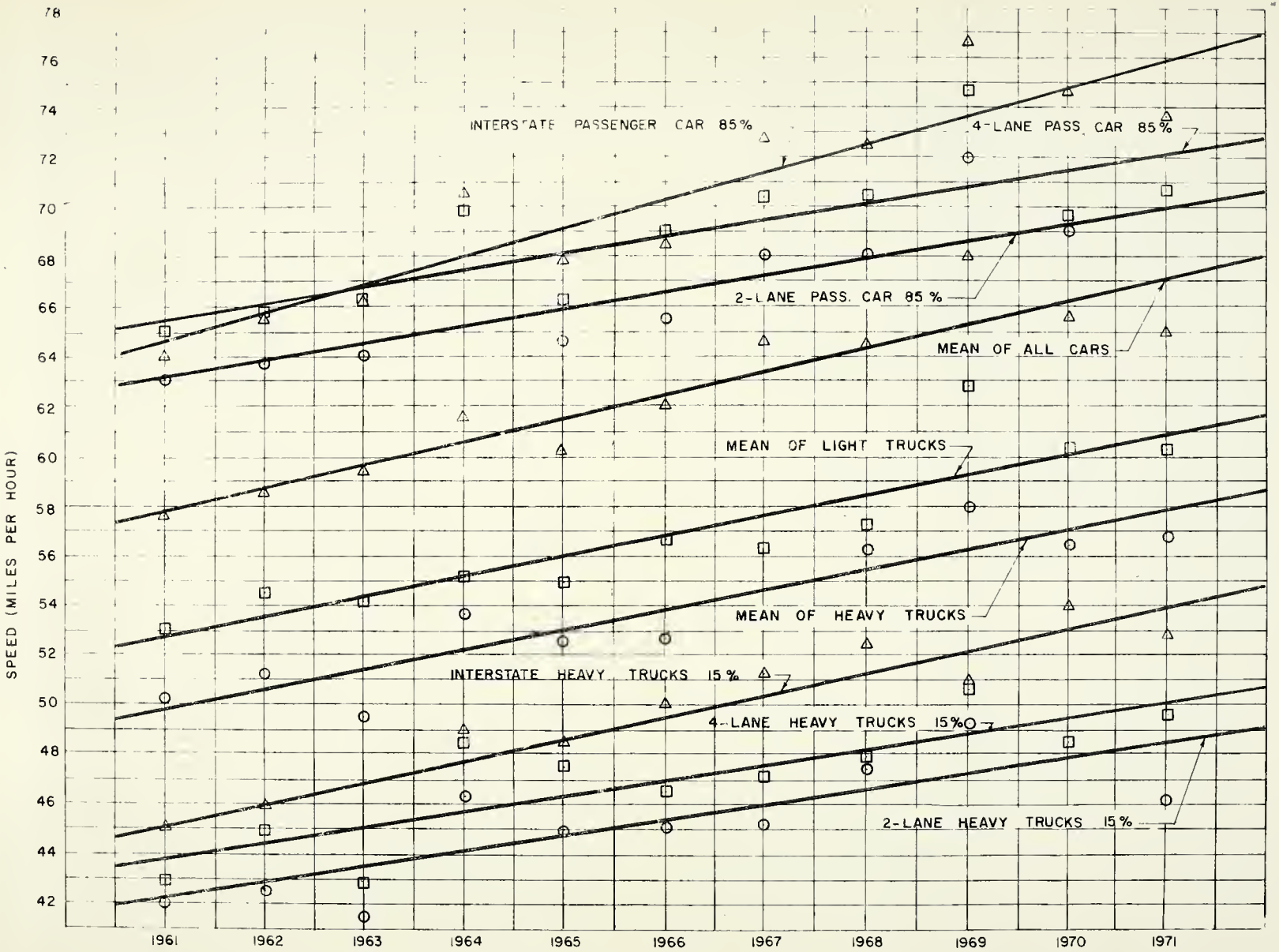


FIG. B – INDIANA RURAL SPEED TRENDS

Summary and Conclusions

The average speeds in this study were found to be 0.60 mph slower for passenger cars and 0.37 mph faster for heavy trucks than the results of the previous year.

The simple linear regression on the results of the past eleven years (1961-1971) concluded at 95% confidence level that:

1. There has been a 1.0 mph/year average annual speed increase for the following seven classifications:
   a. Interstate Passenger Cars 85-percentile,
   b. 4-lane Passenger Cars 85-percentile,
   c. 2-lane Passenger Cars 85-percentile,
   d. Mean of All Passenger Cars,
   e. Mean of All Light Trucks,
   f. Mean of All Heavy Trucks, and
   g. Interstate Heavy Trucks 15-percentile.
2. Two cases showed a smaller increase of 0.5 mph/year:
   a. 4-lane Heavy Trucks 15-percentile, and
   b. 2-lane Heavy Trucks 15-percentile.
3. The speeds of the past four years indicate that the increase during this period may not have been as great as during the period 1961-1967.

The increase in mileage of high type highways such as the Interstate System and the growing percentage of passenger cars violating current maximum speed limits tend to support the belief that drivers select the travel speeds they consider safe irrespective of maximum speed limits.

APPENDIX A

Determination of Sample Size

Determination of Sample Size

It was desired that a 95% confidence interval of the true mean of the speeds of passenger cars should not be wider than 2 mph. For trucks weighing 5,000 lbs. or more a 95% confidence interval with a 4 mph band was desired.

Assuming a normal distribution of speeds and using the standard deviation of the grouped data of the 1970 study, the minimum sample size requirements were determined by

$$N = \left[\frac{2t\ s}{L}\right]^2$$

where N = sample size required

t = tabulated "t" value for 5% level

s = estimated standard deviation

L = band width of confidence interval

For Passenger Cars:

$$N = \left[\frac{2 \times 1.96 \times 7.55}{2}\right]^2 = 219 \text{ observations}$$

For (Heavy) Trucks:

$$N = \left[\frac{2 \times 1.96 \times 6.30}{4}\right]^2 = 38 \text{ observations}$$

<u>NOTE</u>:

At all stations, more than 238 passenger car observations and 52 heavy truck observations were obtained for the study reported herein.

APPENDIX B

Speed Data (Tables 1 to 16)

TABLE 1 SPEED DATA

Station 1 Highway I-69 Location 3.3 Miles South of S.R. 18

No. of Lanes 4 Type of Surface Portland Cement Concrete Weather Clear & Windy

This Observation
Date August 12, 1971
Time 11:50-1:00 p.m.

Last Previous Observation (Speed Report No. 88)
Date August 6, 1970
Time 10:25-12:20 p.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	256	284	180	160	76	124	88	108	21	20	67	88
	Ave. speed (m.p.h.)	68.25	69.22	68.51	69.06	67.63	69.44	60.68	60.31	64.43	66.45	59.51	58.91
	Standard deviation	6.37	6.685	6.71	7.043	5.49	6.215	6.22	7.040	5.99	5.995	5.86	6.515
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	1.14	0.0	0.0	0.0	1.49	0.0
	44 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	1.14	1.85	0.0	0.0	1.49	2.27
	49 m.p.h.	0.0	0.70	0.0	0.63	0.0	0.81	2.27	7.41	0.0	0.0	2.99	9.09
	54 m.p.h.	1.56	1.76	1.11	2.50	2.63	0.81	18.2	18.52	9.52	0.0	20.9	22.73
	59 m.p.h.	9.38	6.69	10.0	8.13	7.89	4.84	39.8	40.74	19.1	10.0	46.3	47.73
	64 m.p.h.	24.2	17.25	23.9	20.63	25.0	12.90	71.6	72.22	38.1	35.0	82.1	80.68
	69 m.p.h.	59.4	50.00	57.8	52.50	63.2	46.77	94.3	92.59	85.7	70.0	97.0	97.73
	74 m.p.h.	87.9	82.04	84.4	81.88	96.1	82.26	100	99.07	100	95.0	100	100
	79 m.p.h.	96.5	96.83	95.6	96.25	98.7	97.58	100	99.07	100	95.0	100	100
	84 m.p.h.	99.2	98.24	98.9	97.50	100	99.19	100	100	100	100	100	100
	89 m.p.h.	99.6	98.94	99.4	98.75	100	99.19	100	100	100	100	100	100
Bnd	No. of vehicles obs.	128	140	93	78	35	62	43	54	12	11	31	43
	Average speed	69.4	70.74	69.8	70.99	68.4	70.42	63.3	62.19	65.0	63.82	62.6	61.77
Bnd	No. of vehicles obs.	128	144	87	82	41	62	45	54	9	9	36	45
	Average speed	67.1	67.75	67.1	67.22	67.0	68.45	58.2	58.43	63.7	69.67	56.8	56.18

TABLE 2 SPEED DATA

Station 2 Highway I-65 Location 1.0 Mile West of S.R. 334

No. of Lanes 4 Type of Surface Portland Cement Concrete Weather Clear & Hot

This Observation
Date July 16, 1971
Time 10:30-11:20 a.m.

Last Previous Observation (Speed Report No. 88)
Date July 17, 1970
Time 11:10-1:05 p.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	317	284	197	175	120	109	89	109	18	25	71	84
	Ave. speed (m.p.h.)	69.00	68.56	68.97	68.28	69.06	69.00	60.18	60.24	63.39	65.32	59.62	58.73
	Standard deviation	6.84	6.495	7.28	6.954	6.10	5.685	6.63	7.329	9.90	8.360	5.47	6.293
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	5.6	0.0	0.0	0.0
	44 m.p.h.	0.0	0.70	0.0	1.14	0.0	0.0	1.1	0.92	5.6	0.0	0.0	1.19
	49 m.p.h.	0.3	0.70	0.0	1.14	0.8	0.0	4.5	6.42	11.1	8.00	2.8	5.95
	54 m.p.h.	2.2	3.17	2.0	4.00	2.5	1.83	18.0	22.94	16.7	16.00	18.3	25.00
	59 m.p.h.	8.5	10.21	9.6	12.57	6.7	6.42	42.7	46.79	27.8	24.00	46.5	53.57
	64 m.p.h.	22.7	21.83	25.9	25.14	17.5	16.51	74.2	70.64	50.0	32.00	80.3	82.14
	69 m.p.h.	51.7	50.35	51.8	49.71	51.7	51.38	94.4	88.07	77.8	64.00	98.6	95.24
	74 m.p.h.	82.3	86.97	81.2	87.43	84.2	86.24	97.8	99.08	94.4	96.00	98.6	100
	79 m.p.h.	94.0	96.48	92.9	96.57	95.8	96.33	98.9	100	94.4	100	100	100
	84 m.p.h.	98.1	99.30	97.0	98.86	100	100	100	100	100	100	100	100
	89 m.p.h.	99.4	100	99.0	100	100	100	100	100	100	100	100	100
End	No. of vehicles obs.	158	141	92	81	66	60	41	55	6	12	35	43
	Average speed	68.4	67.94	68.1	67.65	68.9	68.32	58.9	57.58	62.5	62.08	58.3	56.33
End	No. of vehicles obs.	159	143	105	94	54	49	48	54	12	13	36	41
	Average speed	69.6	69.17	69.8	68.82	69.2	69.84	61.3	62.94	62.3	68.31	60.9	61.24

TABLE 3 SPEED DATA

Station 3 Highway I-74 Location 1.0 Mile East of Post Road

No. of Lanes 4 Type of Surface Portland Cement Concrete Weather Clear

This Observation
Date July 20, 1971
Time 10:00-10:45 a.m.

Last Previous Observation (Speed Report No. 88)
Date August 7, 1970
Time 9:45-11:35 a.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	276	281	186	207	90	74	103	109	24	38	79	71
	Ave. speed (m.p.h.)	68.65	68.00	68.47	67.96	69.02	68.14	61.03	61.51	65.29	64.32	59.73	60.01
	Standard deviation	6.73	6.489	6.95	6.698	6.28	5.906	7.09	6.958	8.84	8.447	5.95	5.517
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.4	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	44 m.p.h.	0.4	0.36	0.5	0.48	0.0	0.0	1.0	0.0	0.0	0.0	1.3	0.0
	49 m.p.h.	0.7	0.36	1.1	0.48	0.0	0.0	6.8	4.59	8.3	5.26	6.3	4.23
	54 m.p.h.	3.3	2.49	3.2	2.90	3.3	1.35	15.5	18.35	12.5	18.42	16.5	18.31
	59 m.p.h.	7.6	8.54	8.1	8.21	6.7	9.46	39.8	37.61	25.0	26.32	44.3	43.66
	64 m.p.h.	22.8	27.05	24.2	28.02	20.0	24.32	70.9	69.72	41.7	42.11	79.8	84.51
	69 m.p.h.	52.9	57.30	54.3	57.97	50.0	55.41	89.3	86.24	58.3	68.42	98.7	95.77
	74 m.p.h.	84.4	86.83	84.9	85.99	83.3	89.19	97.1	95.41	87.5	86.84	100	100
	79 m.p.h.	95.7	97.15	96.2	97.10	94.4	97.30	99.3	100	95.8	100	100	100
	84 m.p.h.	99.3	98.93	98.9	98.55	100	100	100	100	100	100	100	100
	89 m.p.h.	99.6	100	99.5	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	135	140	101	110	34	30	51	55	13	20	38	35
	Average speed	69.1	67.97	69.3	67.76	68.7	68.73	60.7	62.56	65.0	64.85	59.3	61.26
Bnd	No. of vehicles obs.	141	141	85	97	56	44	52	54	11	18	41	36
	Average speed	68.2	68.04	67.5	68.18	69.2	67.73	61.3	60.44	65.6	63.72	60.2	58.81

TABLE 4 SPEED DATA

Station 4 Highway I-65 Location 7.5 Miles North of S.R. 160

No. of Lanes 4 Type of Surface Portland Cement Concrete Weather Partly Cloudy, Hot

This Observation
Date July 8, 1971
Time 12:00-1:00 p.m.

Last Previous Observation (Speed Report No. 88)
Date August 4, 1970
Time 11:25-2:55 p.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	289	282	131	117	158	165	108	105	19	28	89	77
	Ave. speed (m.p.h.)	70.62	68.09	71.13	67.84	70.2	68.27	60.05	61.12	62.74	63.68	59.47	60.19
	Standard deviation	6.62	5.449	7.05	5.158	6.24	5.655	6.08	6.251	7.72	7.708	5.56	5.393
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	44 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.1	0.0
	49 m.p.h.	0.7	0.35	0.0	0.0	1.3	0.61	2.8	0.95	0.0	0.0	3.4	1.30
	54 m.p.h.	1.0	1.42	0.8	0.0	1.3	2.42	18.5	14.29	10.5	10.71	20.2	15.58
	59 m.p.h.	5.2	7.80	6.9	6.84	3.8	8.48	45.4	40.95	42.1	32.14	46.1	44.16
	64 m.p.h.	14.9	24.82	15.3	26.50	14.6	23.64	75.9	72.38	57.9	53.57	79.8	79.22
	69 m.p.h.	41.2	58.87	36.6	63.25	44.9	55.76	93.5	91.43	73.7	78.57	97.8	96.10
	74 m.p.h.	77.5	90.07	73.3	91.45	81.0	89.09	99.1	98.10	94.7	92.86	100	100
	79 m.p.h.	91.4	98.94	90.1	98.29	92.4	99.39	100	99.05	100	96.43	100	100
	84 m.p.h.	97.9	100	97.0	100	98.7	100	100	100	100	100	100	100
	89 m.p.h.	99.0	100	97.7	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	144	141	55	49	89	92	54	52	9	12	45	40
	Average speed	69.8	68.15	70.6	68.10	69.3	68.17	59.4	61.33	61.2	63.17	59.0	60.77
End	No. of vehicles obs.	145	141	76	68	69	73	54	53	10	16	44	37
	Average speed	71.4	68.03	71.5	67.65	71.4	68.38	60.7	69.92	64.1	64.06	59.9	59.57

TABLE 5 SPEED DATA

Station 5 Highway U.S. 31 Location 1.2 Miles South of S.R. 38

No. of Lanes 4 Type of Surface Asphalt Concrete Weather Clear

This Observation
Date July 21, 1971
Time 9:50-10:45 a.m.

Last Previous Observation (Speed Report No. 88)
Date July 28, 1970
Time 10:00-12:20 p.m.

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	294	289	246	237	48	52	108	109	43	35	65	74
	Ave. speed (m.p.h.)	65.40	66.41	65.64	66.8	64.15	67.46	57.79	57.72	59.98	59.80	56.34	56.73
	Standard deviation	7.44	6.343	7.58	6.389	6.67	6.076	8.21	6.807	9.82	8.338	6.65	5.754
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.92	2.3	2.86	0.0	0.0
	39 m.p.h.	0.7	0.0	0.8	0.0	0.0	0.0	2.8	0.92	2.3	2.86	3.1	0.0
	44 m.p.h.	1.0	0.0	1.2	0.0	0.0	0.0	8.3	1.83	11.6	2.86	6.2	1.35
	49 m.p.h.	2.0	0.69	2.0	0.84	2.1	0.0	13.9	9.17	11.6	11.43	15.4	8.11
	54 m.p.h.	5.4	3.81	5.3	4.64	6.3	0.0	28.7	31.19	18.6	20.00	35.4	36.49
	59 m.p.h.	17.4	13.84	16.3	15.19	22.9	7.69	53.7	58.72	46.5	42.86	58.5	66.22
	64 m.p.h.	43.2	36.33	42.7	37.55	45.8	30.77	85.2	84.40	69.8	65.71	95.4	93.24
	69 m.p.h.	73.5	70.24	72.8	71.73	77.1	63.46	95.4	99.08	88.4	97.14	100	100
	74 m.p.h.	89.8	90.31	88.6	91.14	95.8	86.54	98.2	99.08	95.4	97.14	100	100
	79 m.p.h.	97.3	97.58	97.2	97.89	97.9	96.15	99.1	100	97.7	100	100	100
	84 m.p.h.	99.3	99.65	99.2	99.58	100	100	100	100	100	100	100	100
	89 m.p.h.	100	100	100	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	148	140	123	115	25	25	54	55	14	19	40	36
	Average speed	65.8	66.12	66.0	65.99	64.9	66.72	59.7	59.04	63.9	62.32	58.2	57.31
Bnd	No. of vehicles obs.	146	149	123	122	23	27	54	54	29	16	25	38
	Average speed	65.0	66.68	65.3	66.36	63.3	68.15	55.9	56.37	58.1	56.81	53.3	56.18

TABLE 6 SPEED DATA

Station 6 Highway U.S. 52 Location 1.0 Mile East of S.R. 28

No. of Lanes 4 Type of Surface Asphalt Concrete Weather Clear & Windy

This Observation
Date July 13, 1971
Time 1:45-2:35 p.m.

Last Previous Observation (Speed Report No. 88)
Date July 14, 1970
Time 8:54-11:10 a.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	257	296	152	145	105	151	141	142	32	26	109	116
	Ave. speed (m.p.h.)	65.66	66.32	65.52	65.52	65.86	67.09	57.80	58.29	62.81	61.62	56.32	57.54
	Standard deviation	6.21	6.030	6.60	6.141	5.70	5.838	5.89	5.975	4.50	8.055	5.44	5.157
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	44 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	49 m.p.h.	1.6	0.68	2.0	0.0	1.0	1.32	0.7	1.41	0.0	3.85	0.9	0.86
	54 m.p.h.	4.3	3.38	5.3	3.45	2.9	3.31	7.8	6.34	0.0	7.69	10.1	6.03
	59 m.p.h.	13.2	11.15	15.8	16.55	9.5	5.96	31.2	26.76	3.1	19.23	39.5	28.45
	64 m.p.h.	40.1	33.45	42.1	40.69	37.1	26.49	59.6	55.63	18.8	34.62	71.6	60.34
	69 m.p.h.	74.3	73.65	73.0	80.69	76.2	66.89	85.8	87.32	68.8	57.69	90.8	93.97
	74 m.p.h.	93.8	92.91	92.8	91.72	95.2	94.04	97.9	97.18	90.6	84.62	100	100
	79 m.p.h.	97.7	96.96	96.7	96.55	99.1	97.35	100	100	100	100	100	100
	84 m.p.h.	99.6	100	100	100	99.1	100	100	100	100	100	100	100
	89 m.p.h.	100	100	100	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	127	141	78	67	49	74	70	72	18	13	52	59
	Average speed	65.7	65.79	65.3	64.52	66.3	66.95	58.1	57.99	62.8	64.62	56.5	56.53
End	No. of vehicles obs.	130	155	74	78	56	77	71	70	14	13	57	57
	Average speed	65.6	66.81	65.8	66.38	65.5	67.23	57.5	58.60	62.8	58.62	56.2	58.60

TABLE 7 SPEED DATA

Station 7 Highway U.S. 41 Location 1.0 Mile North of S.R. 2

No. of Lanes 4 Type of Surface Portland Cement Concrete Weather Partly Cloudy

This Observation
Date July 22, 1971
Time 9:50-11:20 a.m.

Last Previous Observation (Speed Report No. 88)
Date July 22, 1970
Time 10:05-1:40 p.m.

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	254	281	143	199	111	82	128	109	29	27	99	82
	Ave. speed (m.p.h.)	63.51	63.80	63.76	63.47	63.18	64.60	53.84	56.65	58.59	59.70	52.45	55.65
	Standard deviation	7.26	7.607	7.52	7.251	6.93	8.400	7.10	6.958	8.18	6.690	6.13	6.787
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.92	0.0	0.0	0.0	1.22
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.83	0.0	0.0	2.0	2.44
	44 m.p.h.	0.4	0.71	0.0	0.50	0.9	1.22	8.6	4.59	6.9	0.0	9.1	6.10
	49 m.p.h.	2.8	5.34	2.8	5.03	2.7	6.10	28.9	12.84	17.2	3.70	32.3	15.85
	54 m.p.h.	10.6	9.96	9.1	10.05	12.6	9.76	55.5	33.03	27.6	22.22	63.6	36.59
	59 m.p.h.	25.6	23.84	25.2	24.12	26.1	23.17	77.3	62.39	48.3	51.85	85.9	65.85
	64 m.p.h.	54.3	53.02	53.9	54.27	54.9	50.00	93.8	88.99	72.4	74.07	100	93.90
	69 m.p.h.	81.5	77.22	81.1	80.40	82.0	69.51	98.4	97.25	93.1	96.30	100	97.56
	74 m.p.h.	95.7	93.24	93.7	94.47	98.2	90.24	100	99.08	100	96.30	100	100
	79 m.p.h.	98.8	98.22	97.9	99.50	100	95.12	100	100	100	100	100	100
	84 m.p.h.	99.2	100	98.6	100	100	100	100	100	100	100	100	100
	89 m.p.h.	99.2	100	98.6	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	126	140	72	104	54	36	64	54	18	12	46	42
	Average speed	64.3	63.94	64.4	63.77	64.1	64.44	52.4	55.46	59.5	60.42	49.6	54.05
Bnd	No. of vehicles obs.	128	141	71	95	57	46	64	55	11	15	53	40
	Average speed	62.8	63.66	63.1	63.15	62.3	64.72	55.3	57.82	57.1	59.13	54.9	57.32

TABLE 8 SPEED DATA

Station 8 Highway U.S. 52 Location 1.0 Mile West of Klondike

No. of Lanes 4 Type of Surface Asphalt Concrete Weather Clear & Windy

This Observation
Date July 13, 1971
Time 8:30-10:00 a.m.

Last Previous Observation (Speed Report No. 88)
Date June 23, 1970
Time 8:30-11:20 a.m.

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	302	281	178	203	124	78	146	109	31	53	115	56
	Ave. speed (m.p.h.)	63.45	62.02	63.02	62.19	64.07	61.56	55.71	56.63	57.13	58.91	55.33	54.48
	Standard deviation	6.98	6.865	7.56	6.858	6.04	6.909	5.98	7.982	7.22	8.305	5.58	7.086
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.3	0.71	0.6	0.99	0.0	0.0	0.7	2.75	0.0	1.89	0.9	3.57
	44 m.p.h.	1.3	1.42	2.3	1.48	0.0	1.28	4.1	8.26	3.2	7.55	4.4	8.93
	49 m.p.h.	2.3	4.27	3.9	4.43	0.0	3.85	12.3	17.43	16.1	15.09	11.3	19.64
	54 m.p.h.	7.0	10.68	8.4	11.33	4.8	8.97	41.1	33.94	35.5	22.64	42.6	44.64
	59 m.p.h.	24.8	32.03	28.7	30.54	19.4	35.90	71.2	61.47	58.1	43.40	74.8	78.57
	64 m.p.h.	55.3	63.35	57.3	60.10	52.4	71.79	94.5	82.57	83.9	71.70	97.4	92.85
	69 m.p.h.	83.8	87.19	84.8	85.71	82.3	91.03	99.3	98.17	96.8	96.23	100	100
	74 m.p.h.	95.4	97.15	96.1	97.54	94.4	96.15	100	100	100	100	100	100
	79 m.p.h.	98.7	99.29	98.3	100	99.2	97.44	100	100	100	100	100	100
	84 m.p.h.	99.0	99.64	98.9	100	99.2	100	100	100	100	100	100	100
	89 m.p.h.	99.7	100	99.4	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	158	143	83	116	75	27	64	55	17	25	47	30
	Average speed	63.5	63.90	61.9	63.80	65.4	64.30	55.9	58.80	55.9	61.12	55.9	56.87
Bnd	No. of vehicles obs.	144	138	95	87	49	51	82	54	14	28	68	26
	Average speed	63.4	60.07	64.0	60.05	62.1	60.12	55.5	54.43	58.6	56.93	54.9	51.73

TABLE 9 SPEED DATA

Station 9 Highway U.S. 35 Location 1.5 Miles East of Junction I-69

No. of Lanes 2 Type of Surface Asphalt Concrete Weather Clear

This Observation
Date
Time

Last Previous Observation (Speed Report No. 88)
Date August 8, 1970
Time 1:35-3:30 p.m.

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	253	279	222	239	31	40	121	108	42	36	79	72
	Ave. speed (m.p.h.)	62.06	61.29	62.16	61.33	61.32	61.05	56.91	55.59	59.90	58.11	55.32	54.33
	Standard deviation	6.39	7.098	6.56	7.216	4.97	6.429	7.03	6.432	6.97	7.078	6.56	5.729
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.36	0.0	0.42	0.0	0.0	2.5	0.93	0.0	0.0	3.8	1.39
	44 m.p.h.	0.4	1.08	0.5	0.84	0.0	2.50	4.1	6.48	2.4	5.56	5.1	6.94
	49 m.p.h.	3.2	3.58	3.7	3.77	0.0	2.50	10.7	13.89	7.1	13.89	12.7	13.89
	54 m.p.h.	11.9	15.41	12.2	15.48	9.7	15.00	33.1	39.81	19.1	30.56	40.5	44.44
	59 m.p.h.	29.3	39.43	28.4	40.17	35.5	35.00	62.0	76.85	42.9	61.11	72.2	84.72
	64 m.p.h.	64.0	71.33	62.6	71.55	74.2	70.00	86.0	94.44	73.8	86.11	92.4	98.61
	69 m.p.h.	89.3	90.32	88.7	90.38	93.6	90.00	96.7	98.15	92.9	94.44	98.7	100
	74 m.p.h.	98.0	94.98	97.8	94.56	100	97.50	100	99.07	100	97.22	100	100
	79 m.p.h.	99.2	98.92	99.1	98.74	100	100	100	100	100	100	100	100
	84 m.p.h.	100	99.64	100	99.58	100	100	100	100	100	100	100	100
	89 m.p.h.	100	99.64	100	99.58	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	126	138	106	113	20	25	60	54	23	16	37	38
	Average speed	62.0	61.01	62.3	61.06	60.3	60.80	55.2	55.13	59.4	58.13	52.6	53.87
Bnd	No. of vehicles obs.	127	141	116	126	11	15	61	54	19	20	42	34
	Average speed	62.1	61.57	62.0	61.58	63.2	61.47	58.6	56.06	60.6	58.10	57.7	54.85

TABLE 10 SPEED DATA

Station 10 Highway U.S. 43 Location 2.0 Miles South of Chalmers

No. of Lanes 2 Type of Surface Asphalt Concrete Weather Partly Cloudy

This Observation
Date July 15, 1971
Time 10:00-1:00 p.m.

Last Previous Observation (Speed Report No. 88)
Date June 26, 1970
Time 9:05-12:05 p.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	259	279	235	240	24	39	119	108	45	56	74	52
	Ave. speed (m.p.h.)	63.82	63.31	63.67	63.53	65.25	61.97	56.39	56.69	58.16	58.46	55.32	54.77
	Standard deviation	7.54	7.787	7.25	7.515	10.02	9.292	7.00	8.272	7.88	8.369	6.22	7.798
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.36	0.0	0.0	0.0	2.56	0.0	1.85	0.0	0.0	0.0	3.85
	44 m.p.h.	0.0	0.36	0.0	0.0	0.0	2.56	4.2	5.56	2.2	1.79	5.4	9.62
	49 m.p.h.	3.5	2.87	3.0	2.08	8.3	7.69	15.1	23.15	6.7	19.64	20.3	26.92
	54 m.p.h.	9.7	10.04	9.4	9.17	12.5	15.38	39.5	38.89	33.3	35.71	43.2	42.31
	59 m.p.h.	26.6	30.11	26.4	29.17	29.2	35,90	69.8	60.19	64.4	48.21	73.0	73.08
	64 m.p.h.	52.5	58.42	53.6	57.92	41.7	61.54	89.9	86.11	82.2	82.14	94.6	90.38
	69 m.p.h.	77.2	83.15	77.9	82.50	70.8	87.18	97.5	95.37	93.3	92.86	100	98.08
	74 m.p.h.	93.1	92.47	94.0	92.50	83.3	92.31	99.2	97.22	98.8	94.64	100	100
	79 m.p.h.	97.7	96.77	98.3	96.67	91.7	97.44	99.2	100	97.8	100	100	100
	84 m.p.h.	98.8	98.92	99.2	99.17	95.8	97.44	99.2	100	97.8	100	100	100
	89 m.p.h.	100	99.64	100	99.58	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	118	141	107	124	11	17	59	54	25	31	34	23
	Average speed	63.3	62.78	63.3	62.95	62.8	61.53	57.0	58.33	58.7	59.26	55.8	57.09
Bnd	No. of vehicles obs.	141	138	128	116	13	22	60	54	20	25	40	29
	Average speed	64.3	63.86	64.0	64.15	67.3	62.32	55.8	55.04	57.5	57.48	54.9	52.93

TABLE 11 SPEED DATA

Station 11 Highway U.S. 31 Location 3.0 Miles South of Rochester

No. of Lanes 2 Type of Surface Asphalt Concrete Weather Hazy

This Observation
Date August 13, 1971
Time 11:05-1:15 p.m.

Last Previous Observation (Speed Report No. 88)
Date July 21, 1970
Time 10:25-12:35 p.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	251	286	195	206	56	80	84	108	30	32	54	76
	Ave. speed (m.p.h.)	62.36	61.36	62.09	61.40	63.29	61.25	57.05	56.41	59.50	58.94	55.69	55.34
	Standard deviation	7.27	6.223	7.38	6.711	6.86	4.777	6.05	7.550	6.62	7.943	5.30	7.168
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.78	0.0	3.13	0.0	2.63
	44 m.p.h.	2.0	0.35	2.1	0.49	1.8	0.0	2.4	8.33	0.0	6.25	3.7	9.21
	49 m.p.h.	4.0	2.80	4.6	2.91	1.8	2.50	7.1	18.52	3.3	9.38	9.3	22.37
	54 m.p.h.	12.0	12.24	12.8	13.59	8.9	8.75	36.9	31.48	30.0	21.88	40.7	35.53
	59 m.p.h.	31.5	36.71	33.9	38.35	23.2	32.50	69.1	65.74	60.0	53.13	74.1	71.05
	64 m.p.h.	64.1	71.33	64.6	68.93	62.5	77.50	89.3	87.96	73.3	78.13	98.2	92.11
	69 m.p.h.	84.5	90.21	85.6	88.35	80.4	95.00	96.4	96.30	90.0	90.63	100	98.68
	74 m.p.h.	95.6	98.25	95.9	97.57	94.6	100	100	99.07	100	97.57	100	100
	79 m.p.h.	98.8	99.30	98.5	99.03	100	100	100	100	100	100	100	100
	84 m.p.h.	99.6	100	99.5	100	100	100	100	100	100	100	100	100
	89 m.p.h.	99.6	100	99.5	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	125	143	103	102	22	41	42	54	16	16	26	38
	Average speed	61.3	61.75	60.9	61.97	63.1	61.20	58.4	57.80	60.6	58.87	57.1	57.34
Bnd	No. of vehicles obs.	126	143	92	104	34	39	42	54	14	16	28	38
	Average speed	63.4	60.97	63.4	60.85	63.4	61.31	55.7	55.02	58.3	59.00	54.4	53.34

TABLE 12 SPEED DATA

Station 12 Highway S.R. 25 Location 0.7 Mile West of Americus

No. of Lanes 2 Type of Surface Asphalt Concrete Weather Hazy

This Observation
Date August 13, 1971
Time 11:05-1:15 p.m.

Last Previous Observation (Speed Report No. 88)
Date June 25, 1970
Time 8:55-11:15 a.m.

		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	236	238	207	221	29	17	108	110	31	53	77	57
	Ave. speed (m.p.h.)	60.98	58.94	60.96	59.15	61.17	56.24	54.74	53.83	58.32	56.81	53.30	51.05
	Standard deviation	7.38	7.993	7.60	7.890	5.69	9.059	6.30	7.084	6.84	7.336	5.49	5.607
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.91	0.0	1.89	0.0	0.0
	39 m.p.h.	0.4	1.26	0.5	1.36	0.0	0.0	0.0	2.73	0.0	3.77	0.0	1.75
	44 m.p.h.	3.0	4.20	3.4	3.62	0.0	11.76	6.5	10.00	6.5	5.66	6.5	14.04
	49 m.p.h.	6.4	9.24	7.3	8.14	0.0	23.53	20.4	24.55	9.7	11.32	24.7	36.84
	54 m.p.h.	17.8	28.15	18.4	28.05	13.8	29.41	47.2	51.82	25.8	26.42	55.8	75.44
	59 m.p.h.	39.4	52.94	39.6	51.58	37.9	70.59	72.2	77.27	48.4	64.15	81.8	89.47
	64 m.p.h.	70.8	76.05	71.0	76.02	69.0	76.47	94.4	96.36	80.7	92.45	100	100
	69 m.p.h.	90.3	88.66	89.9	88.24	93.1	94.12	100	98.18	100	96.23	100	100
	74 m.p.h.	97.0	96.64	97.1	96.38	96.6	100	100	100	100	100	100	100
	79 m.p.h.	99.2	100	99.0	100	100	100	100	100	100	100	100	100
	84 m.p.h.	100	100	100	100	100	100	100	100	100	100	100	100
	89 m.p.h.	100	100	100	100	100	100	100	100	100	100	100	100
Bnd	No. of vehicles obs.	117	120	96	109	21	11	55	59	15	34	40	25
	Average speed	60.4	58.88	60.3	58.71	60.7	60.64	53.4	54.92	57.7	57.03	51.8	52.04
Bnd	No. of vehicles obs.	119	118	111	112	8	6	53	51	16	19	37	32
	Average speed	61.6	59.00	61.5	59.58	62.5	48.17	56.1	52.57	58.9	56.42	54.9	50.28

TABLE 13 SPEED DATA

Station 1,2,3,4 Highway Interstate Location See Individual Stations

No. of Lanes _____ Type of Surface _____ Weather _____

This Observation
Date _____
Time _____

Last Previous Observation (Speed Report No. 88)
Date _____
Time _____

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	1138	1131	694	659	444	472	388	431	82	111	306	320
	Ave. speed (m.p.h.)	69.16	68.47	69.13	68.29	69.21	68.72	60.48	60.79	63.84	64.77	59.58	59.42
	Standard deviation	6.71	6.309	7.06	6.612	6.13	5.858	6.51	6.909	8.15	7.810	5.68	5.993
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	39 m.p.h.	0.1	0.0	0.1	0.0	0.0	0.0	0.5	0.0	1.2	0.0	0.3	0.0
	44 m.p.h.	0.1	0.27	0.1	0.46	0.0	0.0	1.0	0.70	1.2	0.0	1.0	0.94
	49 m.p.h.	0.4	0.53	0.3	0.61	0.7	0.42	4.1	4.87	4.9	3.60	3.9	5.31
	54 m.p.h.	2.0	2.21	1.9	2.58	2.3	1.69	17.6	18.56	12.2	12.61	19.0	20.63
	59 m.p.h.	7.6	8.31	8.8	9.10	5.9	7.20	42.0	41.53	28.1	24.32	45.8	47.50
	64 m.p.h.	21.1	22.72	22.9	25.19	18.2	19.28	73.2	71.23	46.3	41.44	80.4	81.56
	69 m.p.h.	51.1	54.11	51.2	55.39	50.9	52.33	92.8	89.56	73.2	70.27	98.0	96.25
	74 m.p.h.	82.9	86.47	81.6	86.34	84.9	86.65	98.5	97.91	93.9	91.89	99.7	100
	79 m.p.h.	94.3	97.35	93.9	96.97	94.8	97.88	99.5	99.54	97.6	98.20	100	100
	84 m.p.h.	98.6	99.12	98.0	98.63	99.6	99.79	100	100	100	100	100	100
	89 m.p.h.	99.4	99.73	99.0	99.70	1-0	99.79	100	100	100	100	100	100

TABLE 14 SPEED DATA

Station 5,6,7,8 Highway 4 Lanes Location See Individual Stations

No. of Lanes _____ Type of Surface _____ Weather _____

This Observation
Date _____
Time _____

Last Previous Observation (Speed Report No. 88)
Date _____
Time _____

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	1107	1147	719	784	388	363	523	469	135	141	388	328
	Ave. speed (m.p.h.)	64.49	64.69	64.59	64.34	64.31	65.39	56.24	57.39	59.70	59.78	55.04	56.36
	Standard deviation	7.07	6.964	7.43	6.880	6.36	7.098	6.93	6.918	8.04	7.957	6.06	6.153
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.43	0.7	0.71	0.0	0.30
	39 m.p.h.	0.3	0.17	0.4	0.26	0.0	0.0	1.2	1.28	0.7	1.42	1.3	1.22
	44 m.p.h.	0.7	0.52	1.0	0.51	0.3	0.55	5.2	3.84	5.9	4.26	4.9	3.66
	49 m.p.h.	2.2	2.70	2.6	2.68	1.3	2.75	15.5	11.09	11.1	10.64	17.0	11.28
	54 m.p.h.	6.8	6.89	6.8	7.53	6.7	5.51	39.4	30.92	20.7	21.28	45.9	35.06
	59 m.p.h.	20.3	20.05	21.0	21.68	19.1	16.53	66.0	59.28	42.9	43.26	74.0	66.16
	64 m.p.h.	48.3	46.29	48.4	48.21	48.2	42.15	90.1	85.93	73.3	68.09	95.9	93.60
	69 m.p.h.	78.3	76.98	77.5	79.21	79.9	72.18	97.9	97.87	91.9	94.33	100	99.39
	74 m.p.h.	93.6	93.37	92.4	93.75	95.9	92.56	99.6	99.57	98.5	98.58	100	100
	79 m.p.h.	98.1	97.99	97.5	98.60	99.2	96.69	99.8	100	99.3	100	100	100
	84 m.p.h.	99.3	99.83	99.2	99.87	99.5	99.72	100	100	100	100	100	100
	89 m.p.h.	99.7	100	99.6	100	100	100	100	100	100	100	100	100

TABLE 15 SPEED DATA

Station 9,10,11,12 Highway 2 Lanes Location See Individual Stations

No. of Lanes _____ Type of Surface _____ Weather _____

This Observation
Date _____
Time _____

Last Previous Observation (Speed Report No. 88)
Date _____
Time _____

	OBSERVATION	PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	999	1082	859	906	140	176	432	434	148	177	284	257
	Ave. speed (m.p.h.)	62.34	61.31	62.27	61.40	62.75	60.88	56.25	55.62	58.96	57.98	54.84	53.99
	Standard deviation	7.22	7.419	7.25	7.509	7.02	6.942	6.70	7.423	7.14	7.715	6.01	6.765
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.23	0.0	0.56	0.0	0.0
	39 m.p.h.	0.1	0.46	0.1	0.44	0.0	0.57	0.7	2.07	0.0	1.69	1.1	2.33
	44 m.p.h.	1.3	1.39	1.4	1.21	0.7	2.27	4.4	7.60	2.7	4.52	5.3	9.73
	49 m.p.h.	4.2	4.44	4.5	4.19	2.1	5.68	13.7	20.05	6.8	14.12	17.3	24.12
	54 m.p.h.	12.7	15.99	13.0	16.45	10.7	13.64	39.1	40.55	27.0	29.38	45.4	48.25
	59 m.p.h.	31.5	39.28	31.8	39.62	30.0	37.50	68.1	70.05	54.1	56.50	75.4	79.38
	64 m.p.h.	62.7	69.04	62.6	68.43	62.9	72.16	89.8	91.24	77.7	85.31	96.1	95.33
	69 m.p.h.	85.2	88.08	85.3	87.31	84.3	92.05	97.7	97.00	93.9	93.79	99.7	99.22
	74 m.p.h.	95.9	95.56	96.2	95.14	94.3	97.73	99.8	98.85	99.3	97.18	100	100
	79 m.p.h.	98.7	98.71	98.7	98.57	98.6	99.43	99.8	100	99.3	100	100	100
	84 m.p.h.	99.6	99.63	99.7	99.67	99.3	99.43	99.8	100	99.3	100	100	100
	89 m.p.h.	99.9	99.82	99.9	99.78	100	100	100	100	100	100	100	100

TABLE 16 SPEED DATA

Station 1 thru 12 Highway Indiana System Location See Individual Stations

No. of Lanes _____ Type of Surface _____ Weather _____

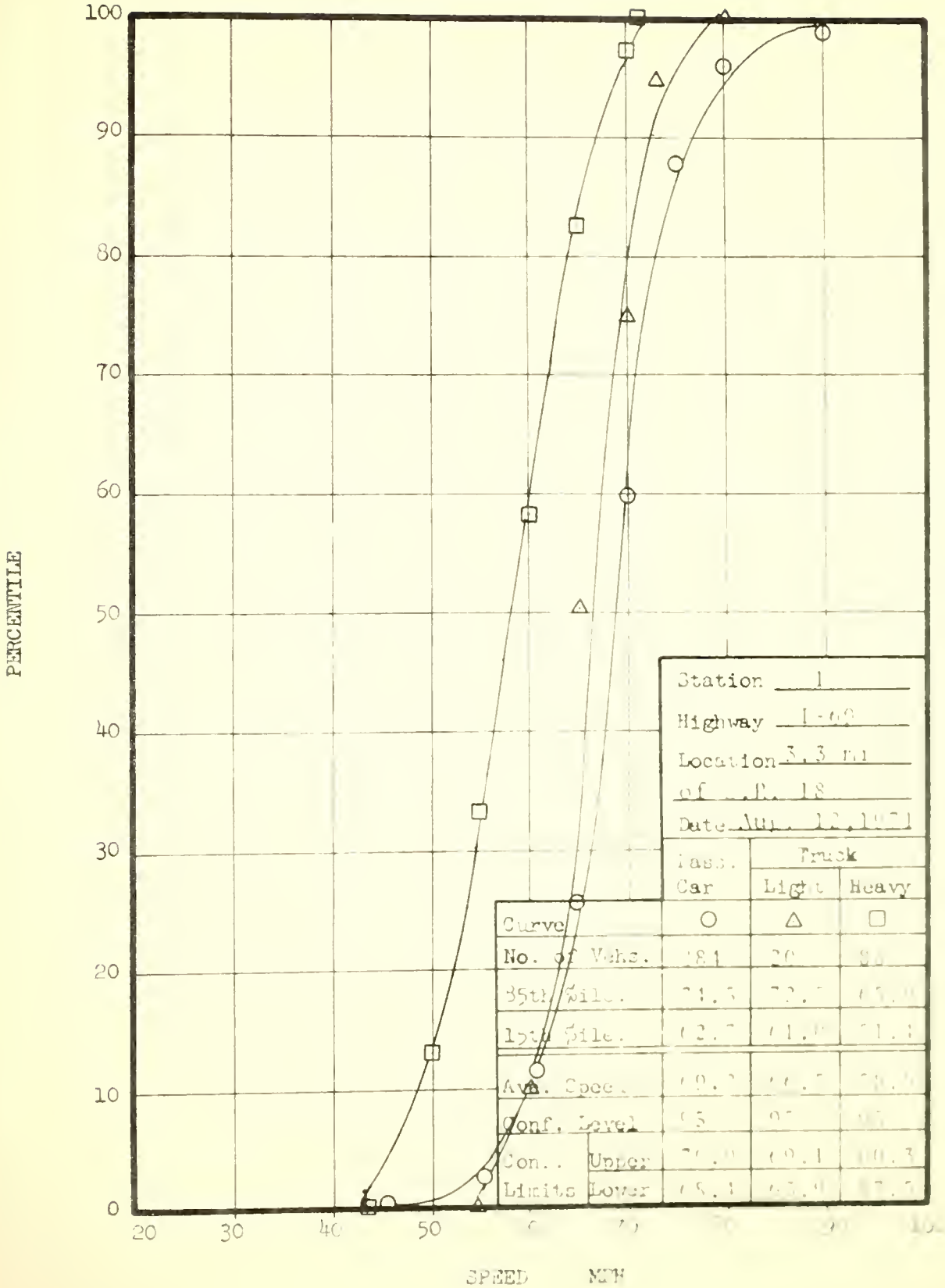
This Observation
Date _____
Time _____

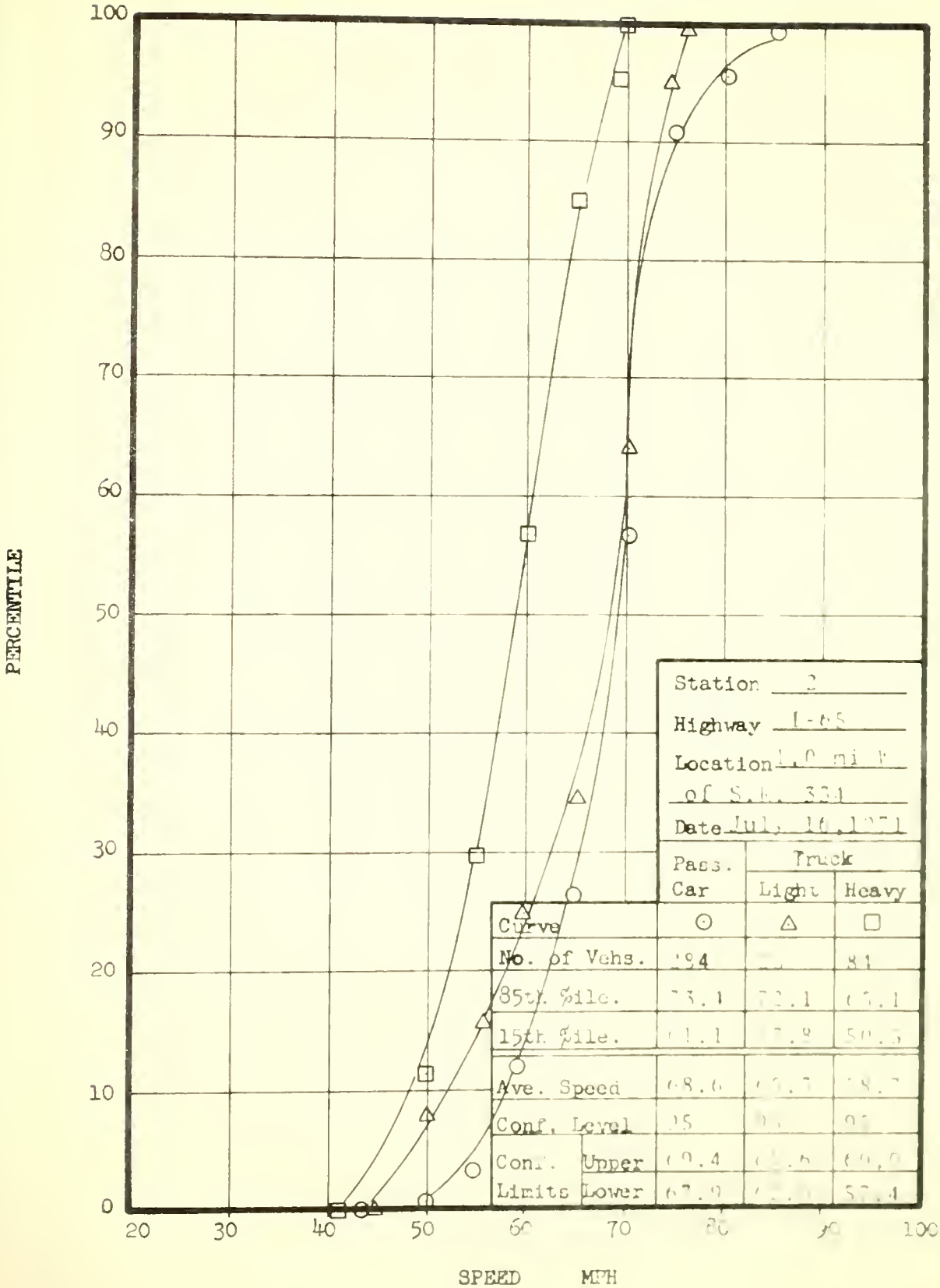
Last Previous Observation (Speed Report No. 88)
Date _____
Time _____

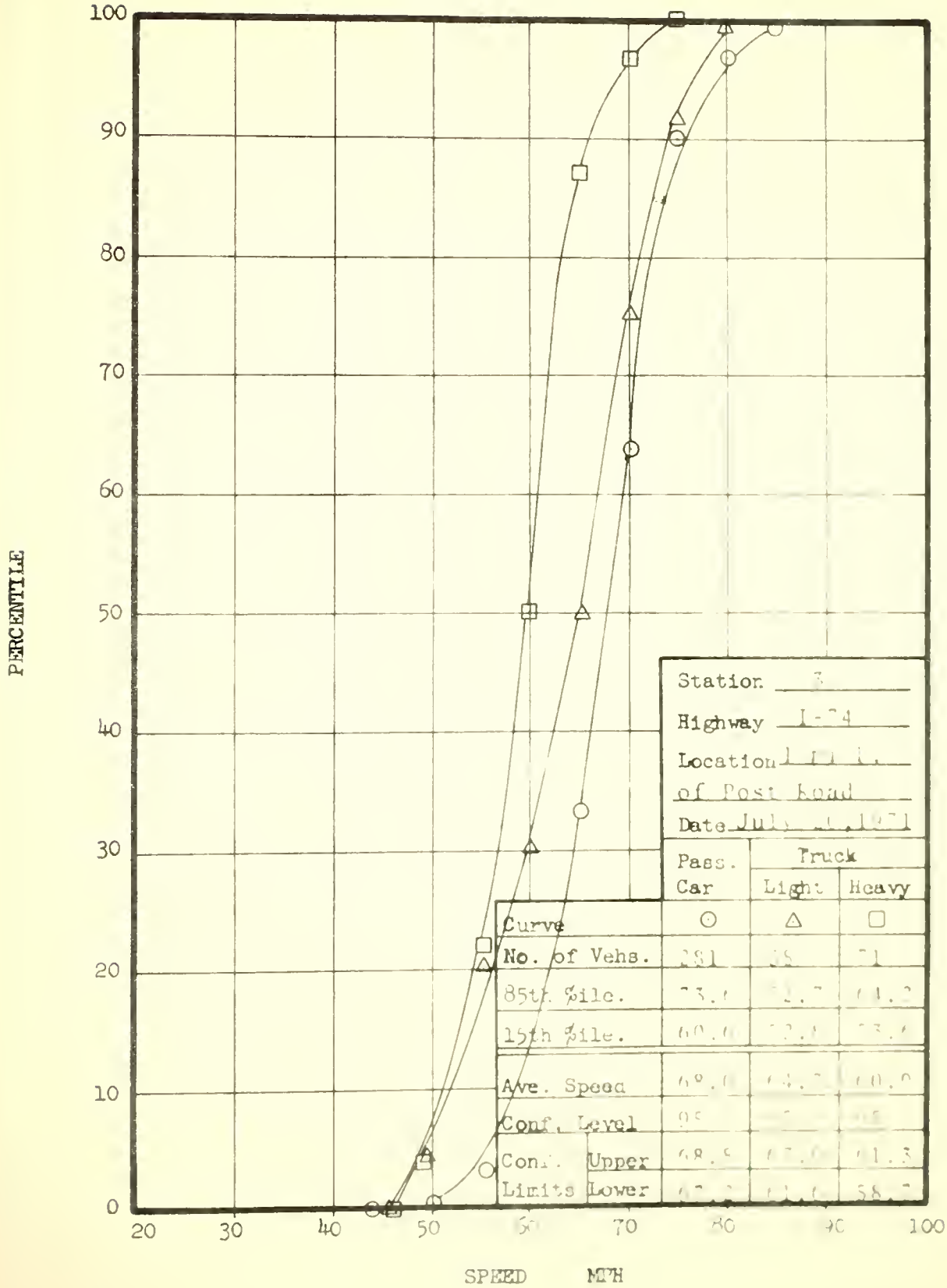
		PASSENGER CARS						TRUCKS					
		All		Indiana		Non-Indiana		All		<5000 lbs.		>5000 lbs.	
	OBSERVATION	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
All Vehicles	No. of vehicles obs.	3244	3360	2272	2349	972	1011	1343	1334	365	429	978	905
	Ave. speed (m.p.h.)	65.47	64.87	65.10	64.31	66.32	66.16	57.47	57.91	60.33	60.33	56.40	56.77
	Standard deviation	7.55	7.490	7.78	7.582	6.90	7.110	7.00	7.388	7.93	8.267	6.30	6.638
	% of vehicles traveling at or less than 24 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	29 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	34 m.p.h.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.22	0.3	0.47	0.0	0.11
	39 m.p.h.	0.2	0.21	0.2	0.26	0.0	0.10	0.8	1.12	0.6	1.17	0.9	1.10
	44 m.p.h.	0.7	0.71	0.9	0.77	0.2	0.59	3.7	4.05	3.6	3.26	3.8	4.42
	49 m.p.h.	2.2	2.53	2.6	2.68	1.1	2.18	11.6	11.99	7.9	10.26	13.0	12.82
	54 m.p.h.	6.9	8.24	7.7	9.58	5.3	5.14	33.0	30.06	21.4	22.38	37.3	33.70
	59 m.p.h.	19.3	22.29	21.4	25.07	14.6	15.83	59.7	57.05	44.1	43.82	65.5	63.31
	64 m.p.h.	43.2	45.68	46.0	49.55	36.6	36.70	85.1	82.91	69.0	68.30	91.1	89.83
	69 m.p.h.	70.9	72.86	72.4	75.65	67.3	66.37	96.4	94.90	88.5	87.88	99.3	98.23
	74 m.p.h.	90.5	91.76	90.5	92.21	90.6	90.70	99.3	98.80	97.8	96.27	99.9	100
	79 m.p.h.	96.9	98.01	69.9	98.13	97.1	97.73	99.7	99.85	98.9	99.53	100	100
	84 m.p.h.	99.1	99.52	99.0	99.45	99.5	99.70	99.9	100	99.7	100	100	100
	89 m.p.h.	99.7	99.85	99.5	99.83	100	99.90	100	100	100	100	100	100

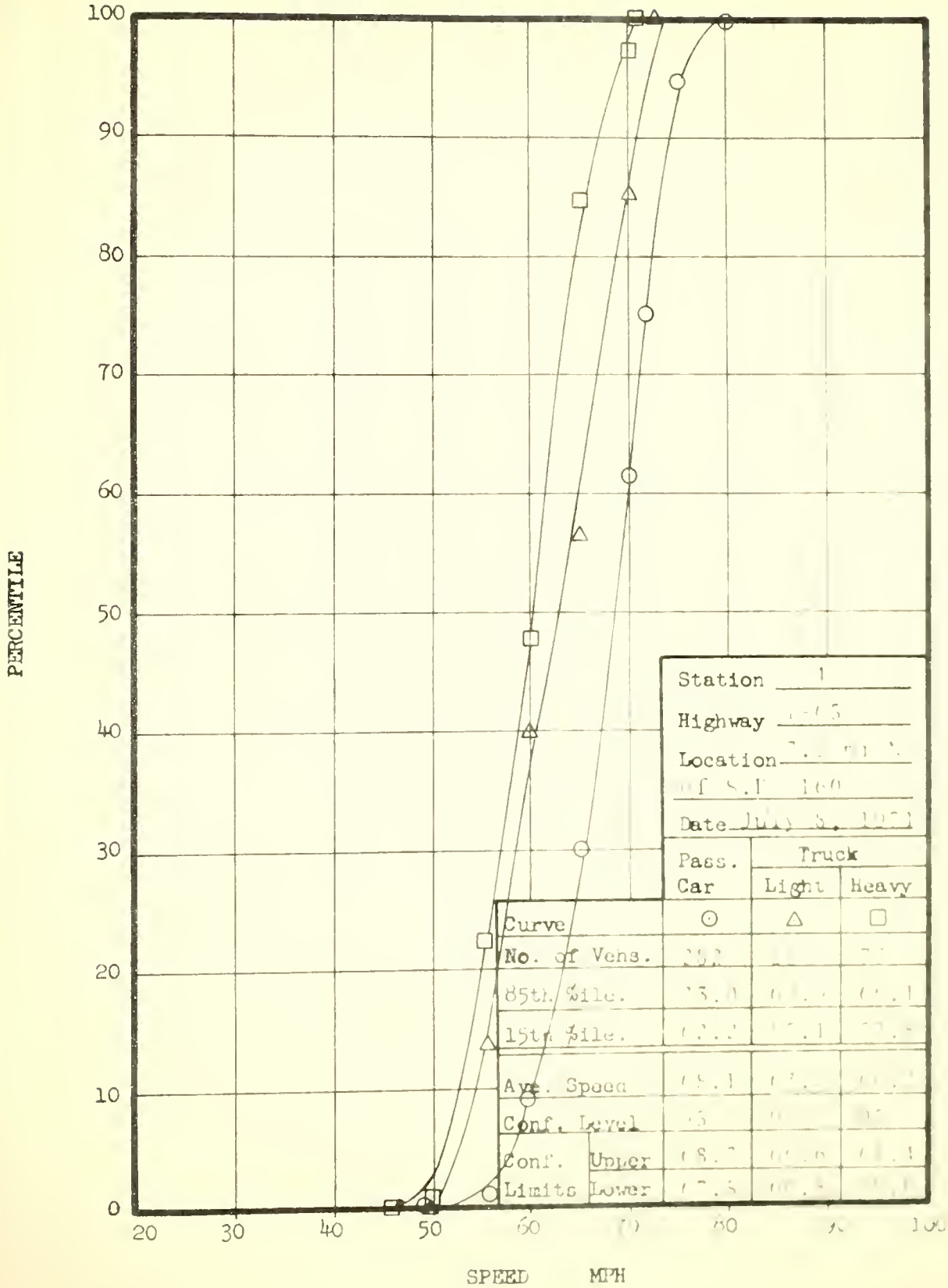
APPENDIX C

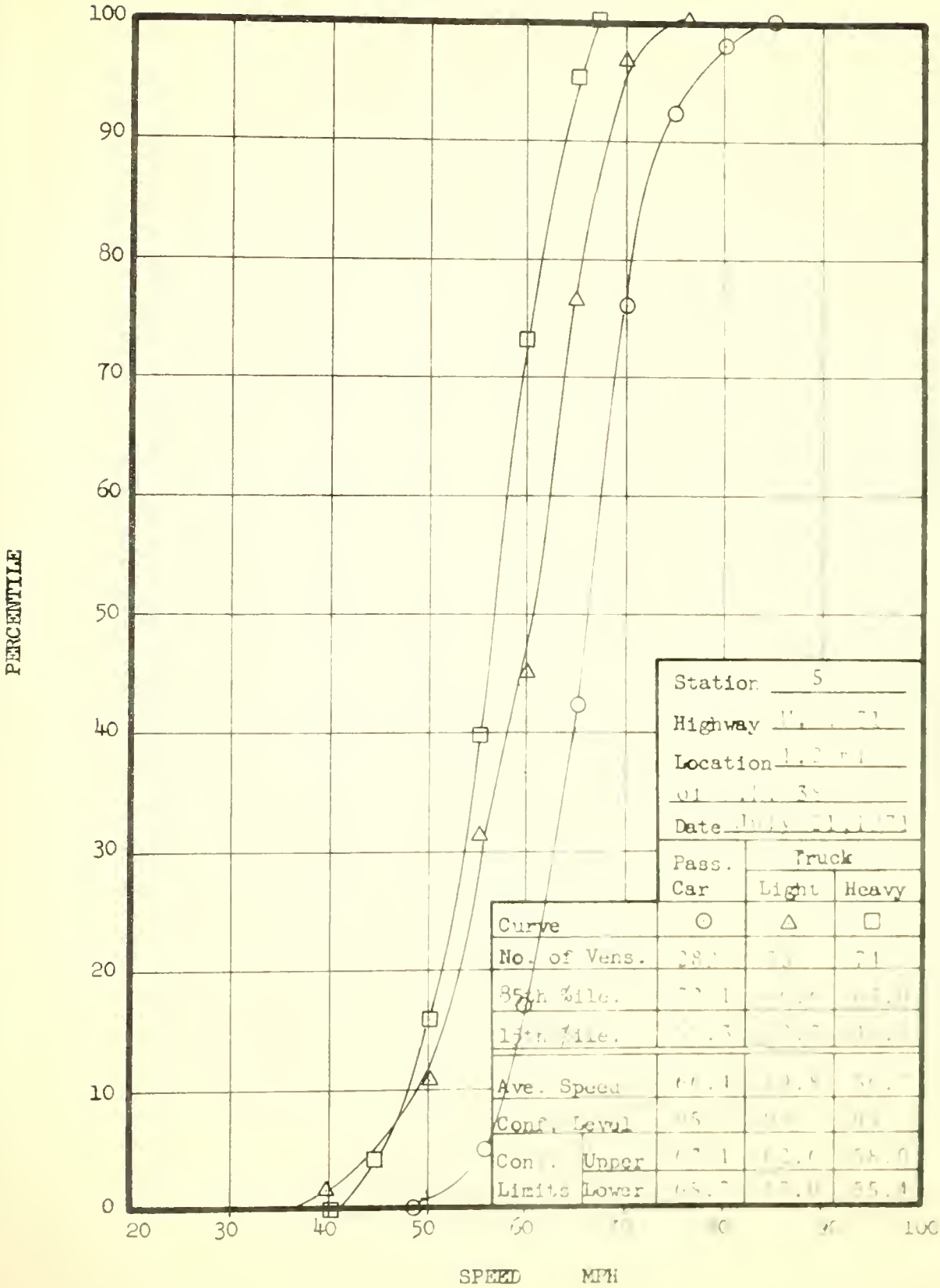
Speed Curves (Figures 1 to 16)

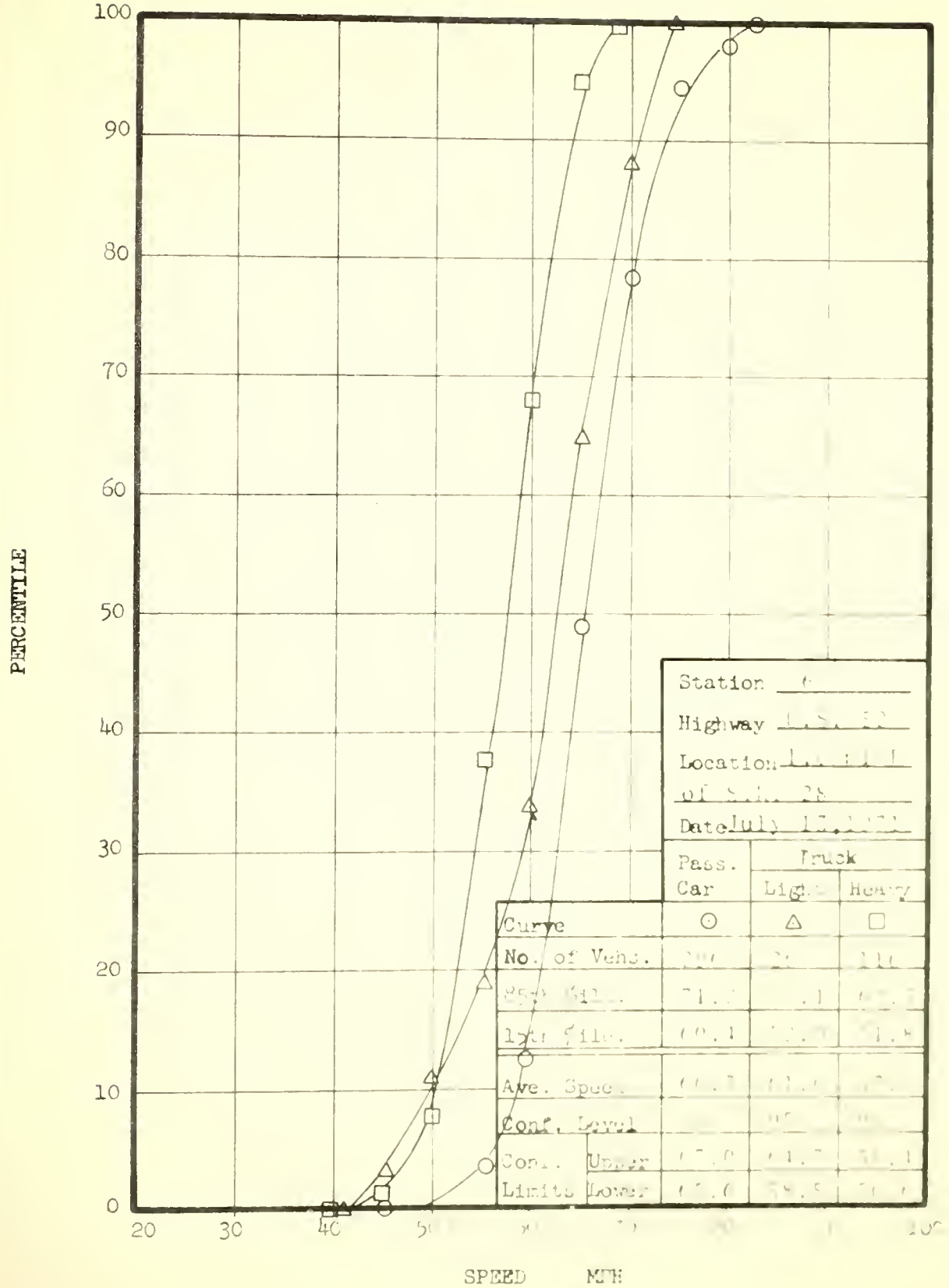

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
SPEED MPH
Station 1
Highway I-66
Location 3.3 mi
of J. 18
Date Aug. 12, 1971
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Avg. Spec.
Conf. Level
Con.. Limits
Upper
Lower

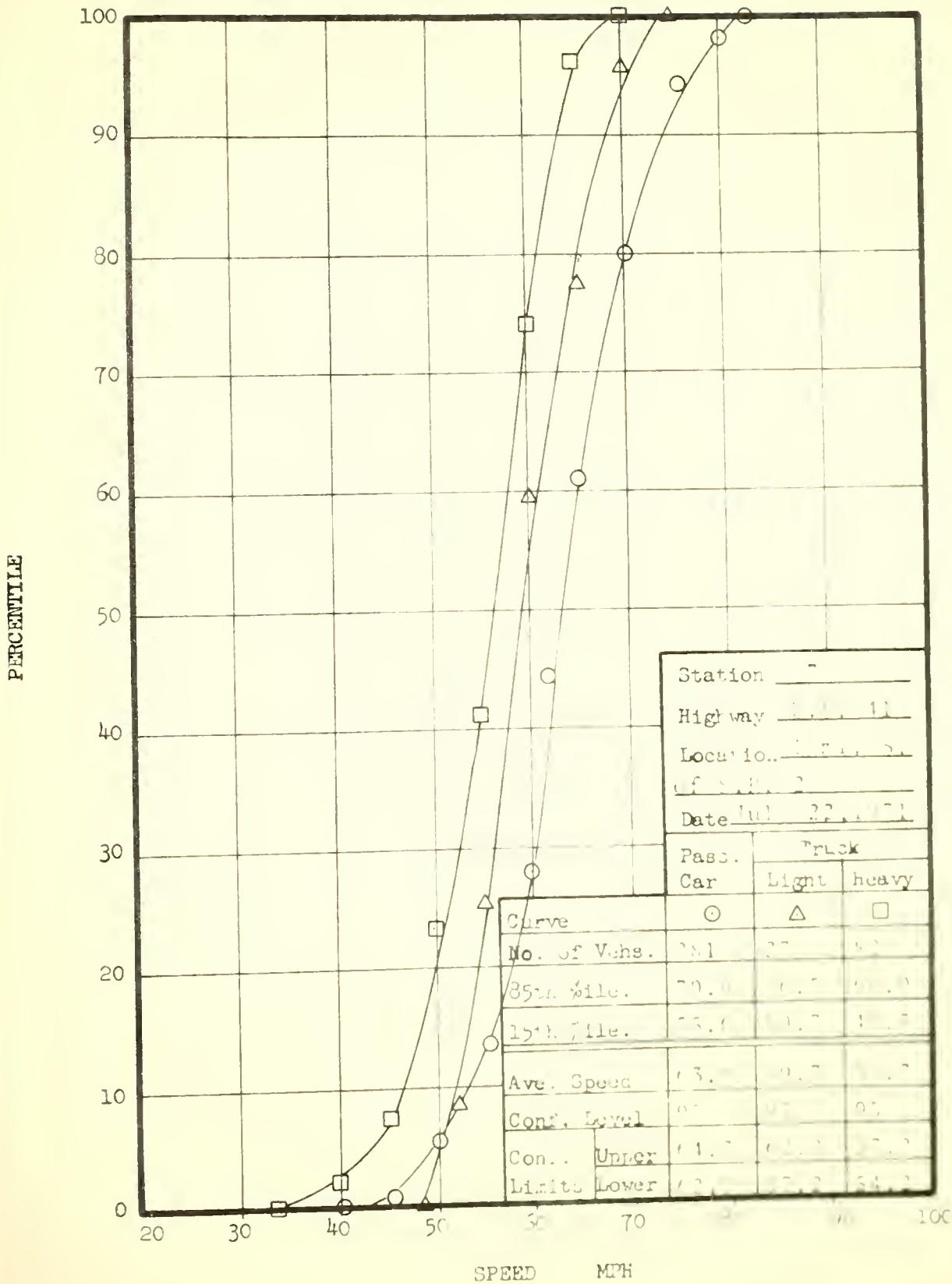

PERCENTILE
SPEED MPH
Station 2
Highway I-65
Location 1.0 mi N of S.R. 334
Date Jul. 16, 1971
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs. 194 81
85th %ile. 73.1 72.1 65.1
15th %ile. 61.1 57.8 50.5
Ave. Speed 68.6 68.7 58.7
Conf. Level 95 95 95
Conf. Limits Upper 69.4 69.6 60.0
Lower 67.9 67.8 57.4

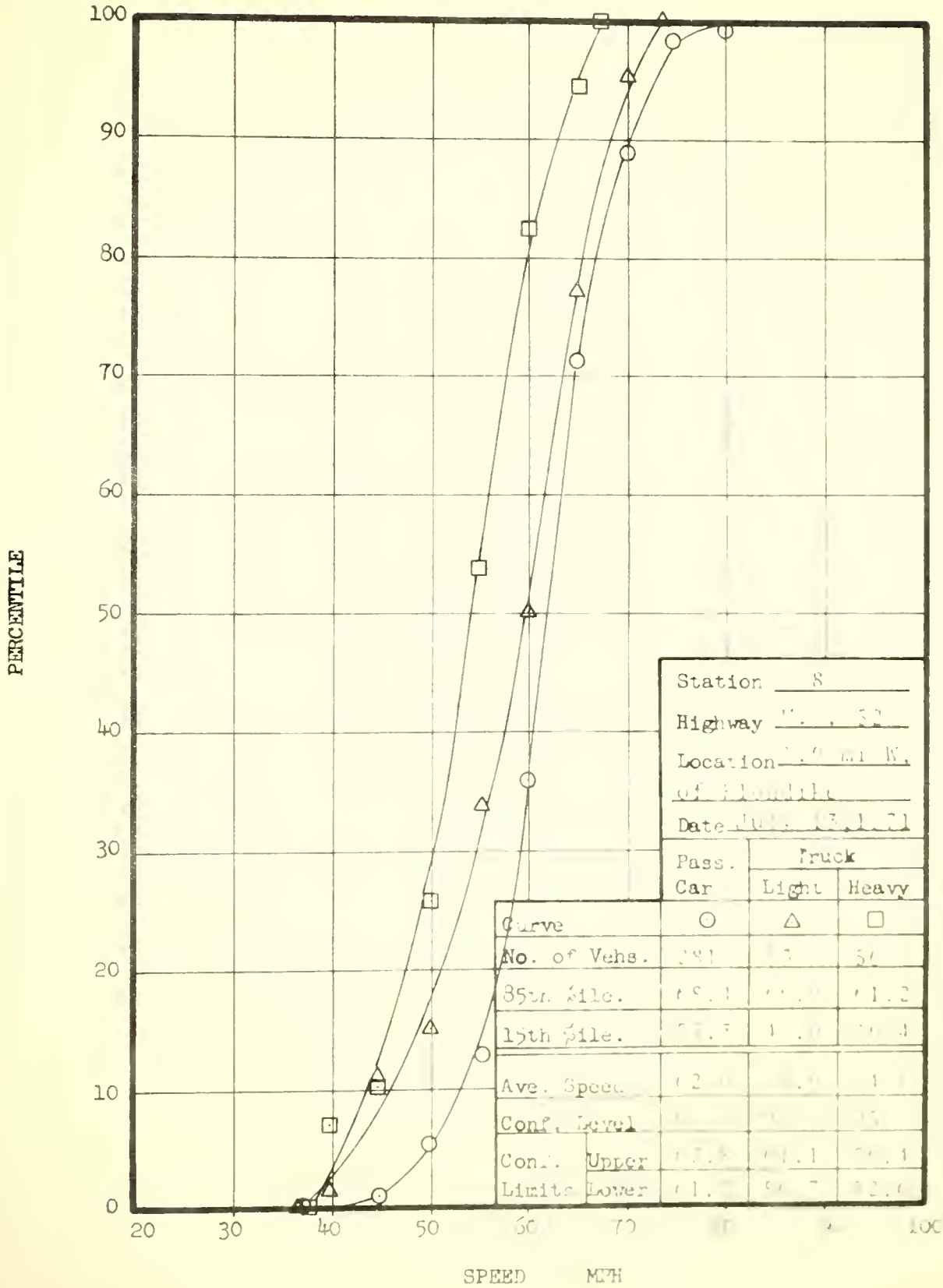

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
SPEED MPH
Station
Highway
Location
of Post Road
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

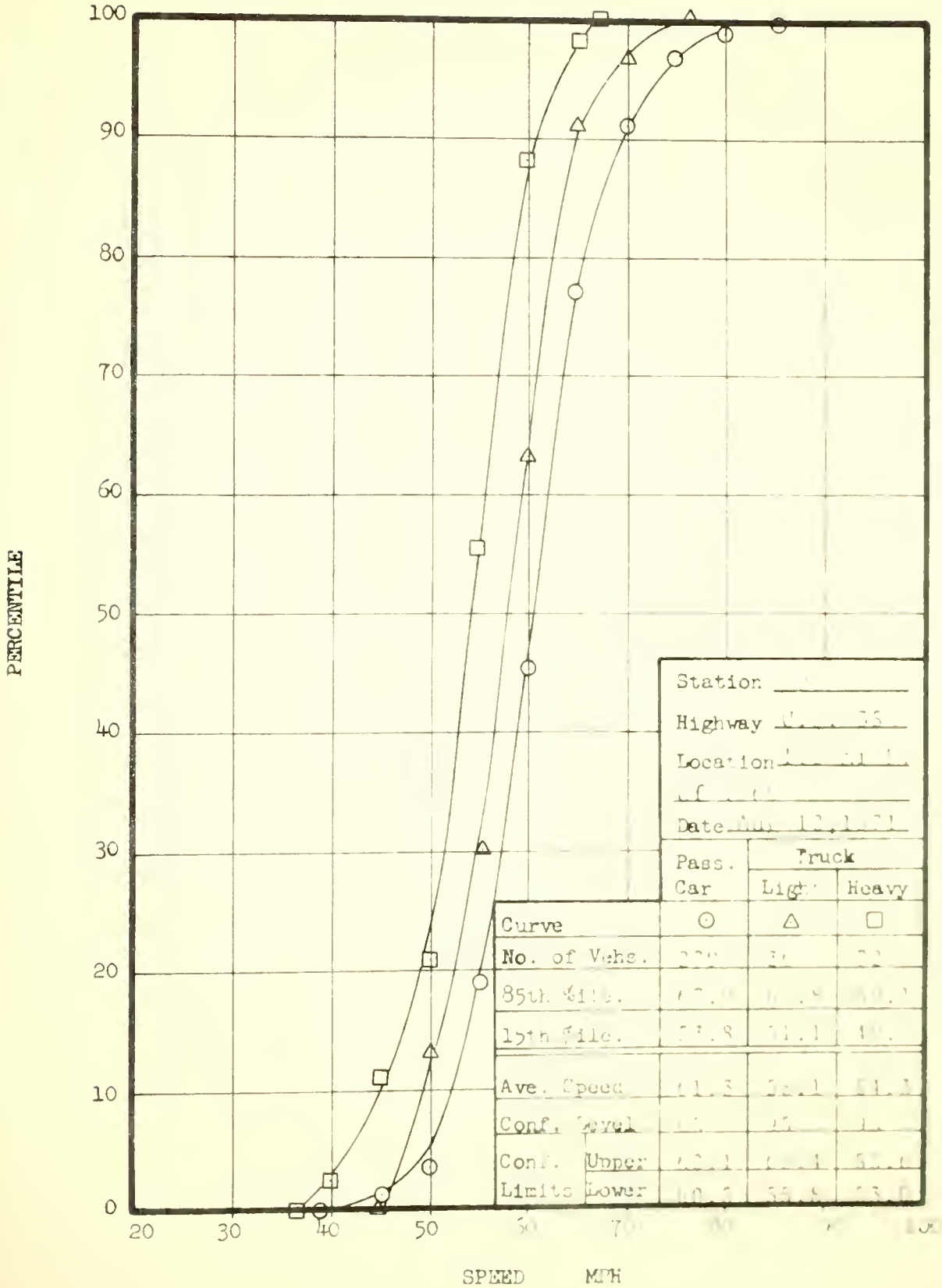

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
SPEED MPH
Station 1
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th. %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

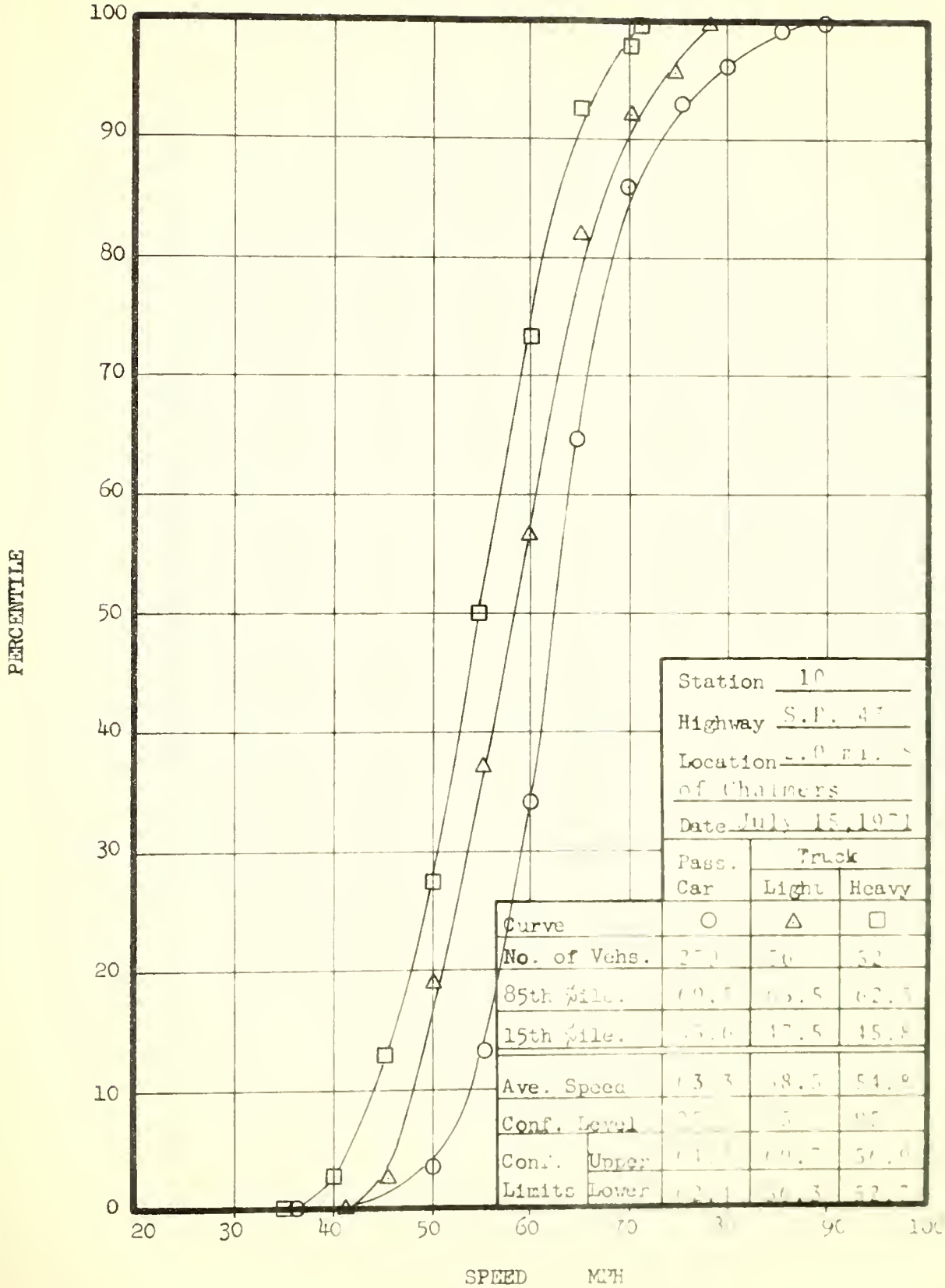

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
100
SPEED MPH
Station 5
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vens.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

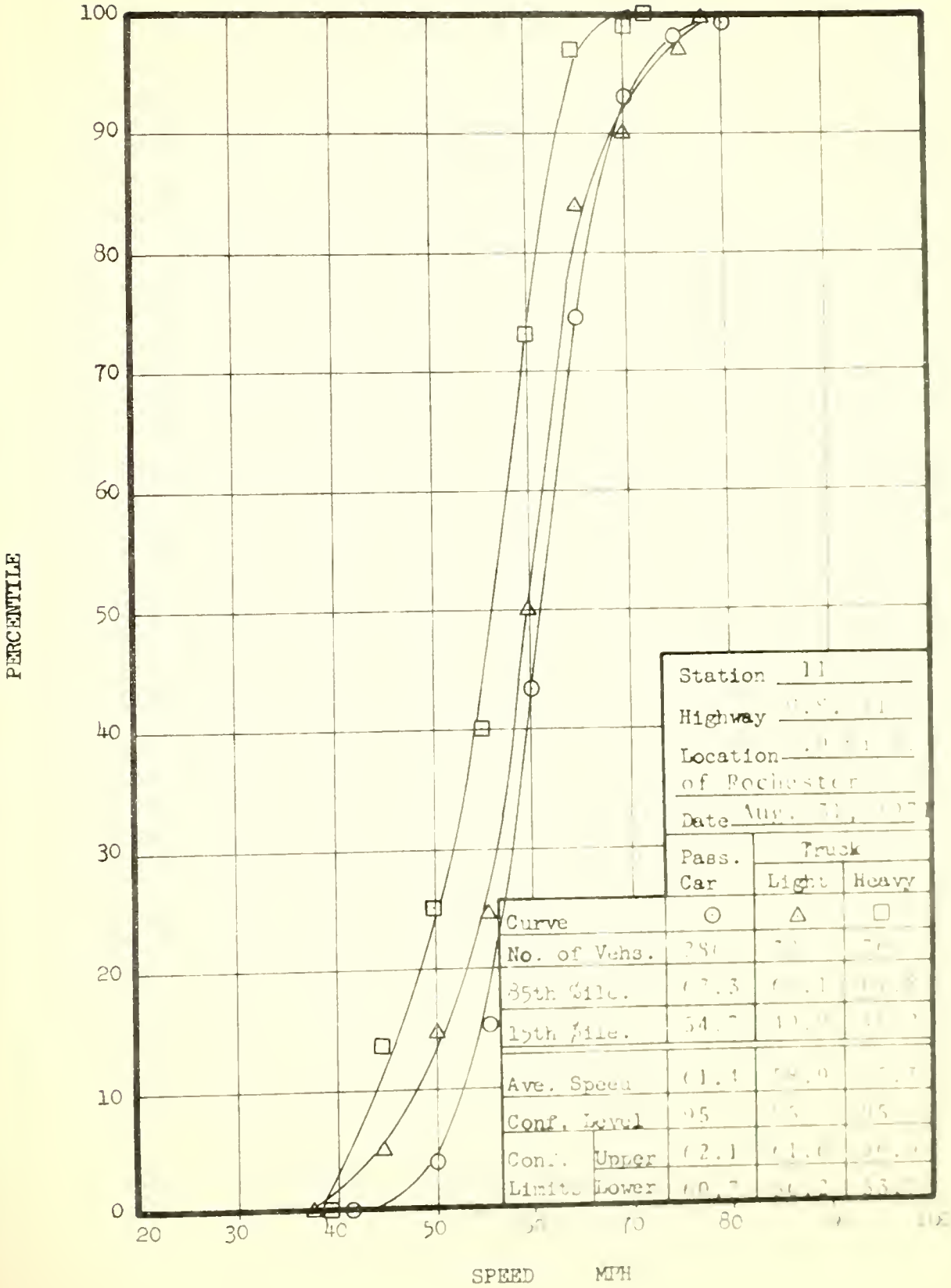

100
90
80
70
60
50
40
30
20
10
0
PERCENTILE
20
30
40
SPEED MPH
Station
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

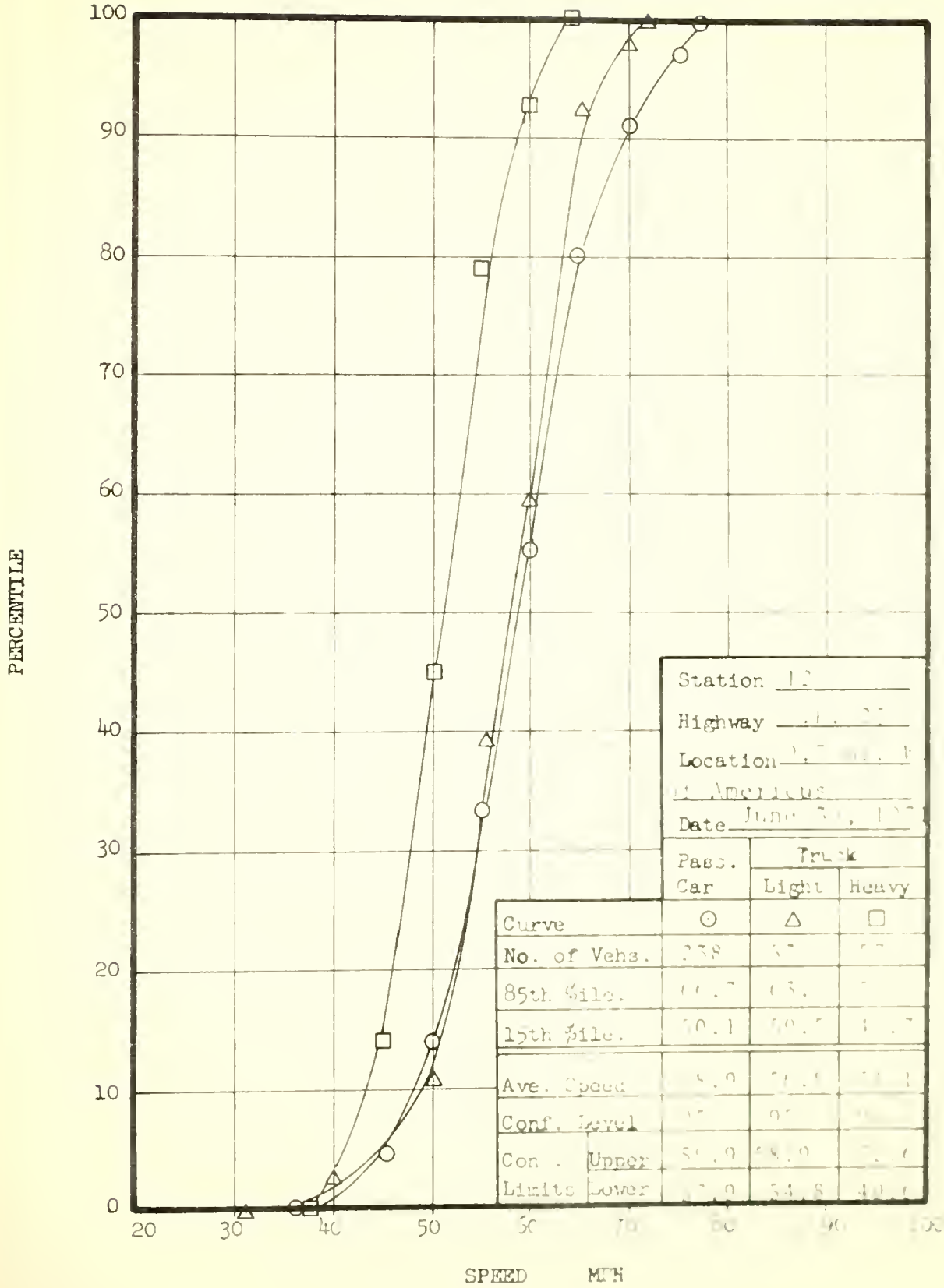

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
70
100
SPEED MPH
Station
Highway
Date
Pass. Car
Truck
Light
heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Con.. Limits
Upper
Lower

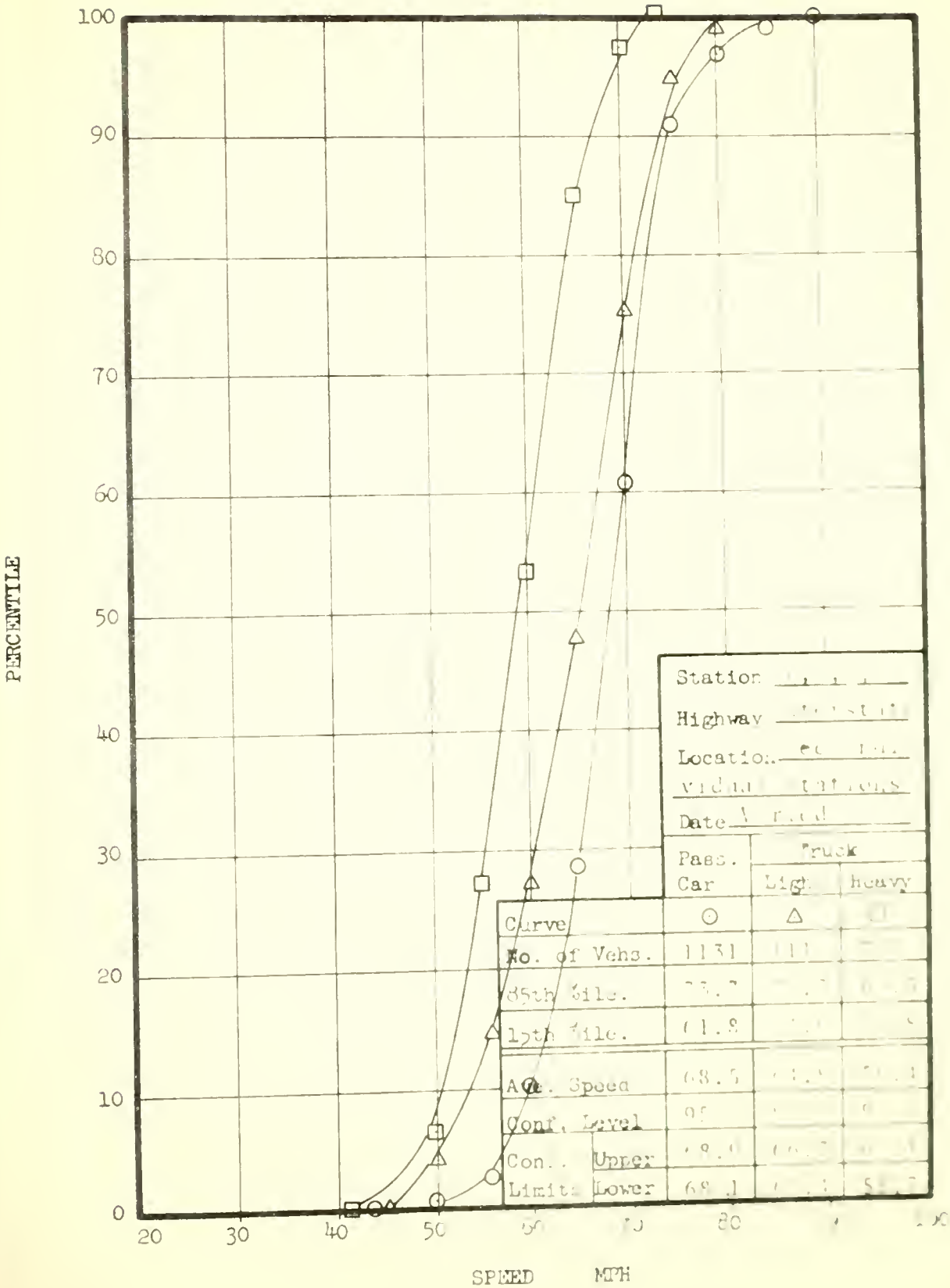

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
100
SPEED MPH
Station 8
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

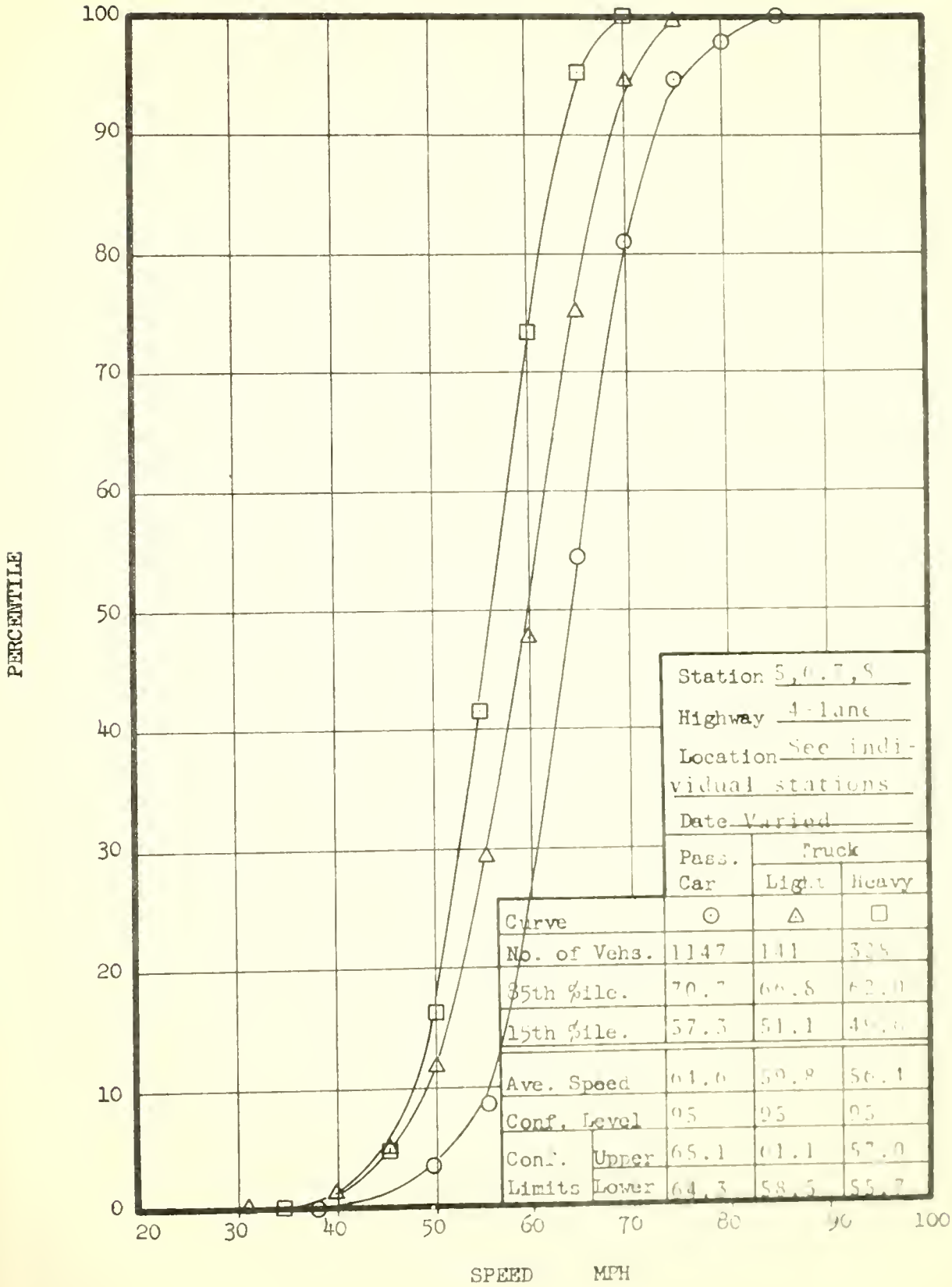

PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
SPEED MPH
Station
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th Ptile.
15th Ptile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

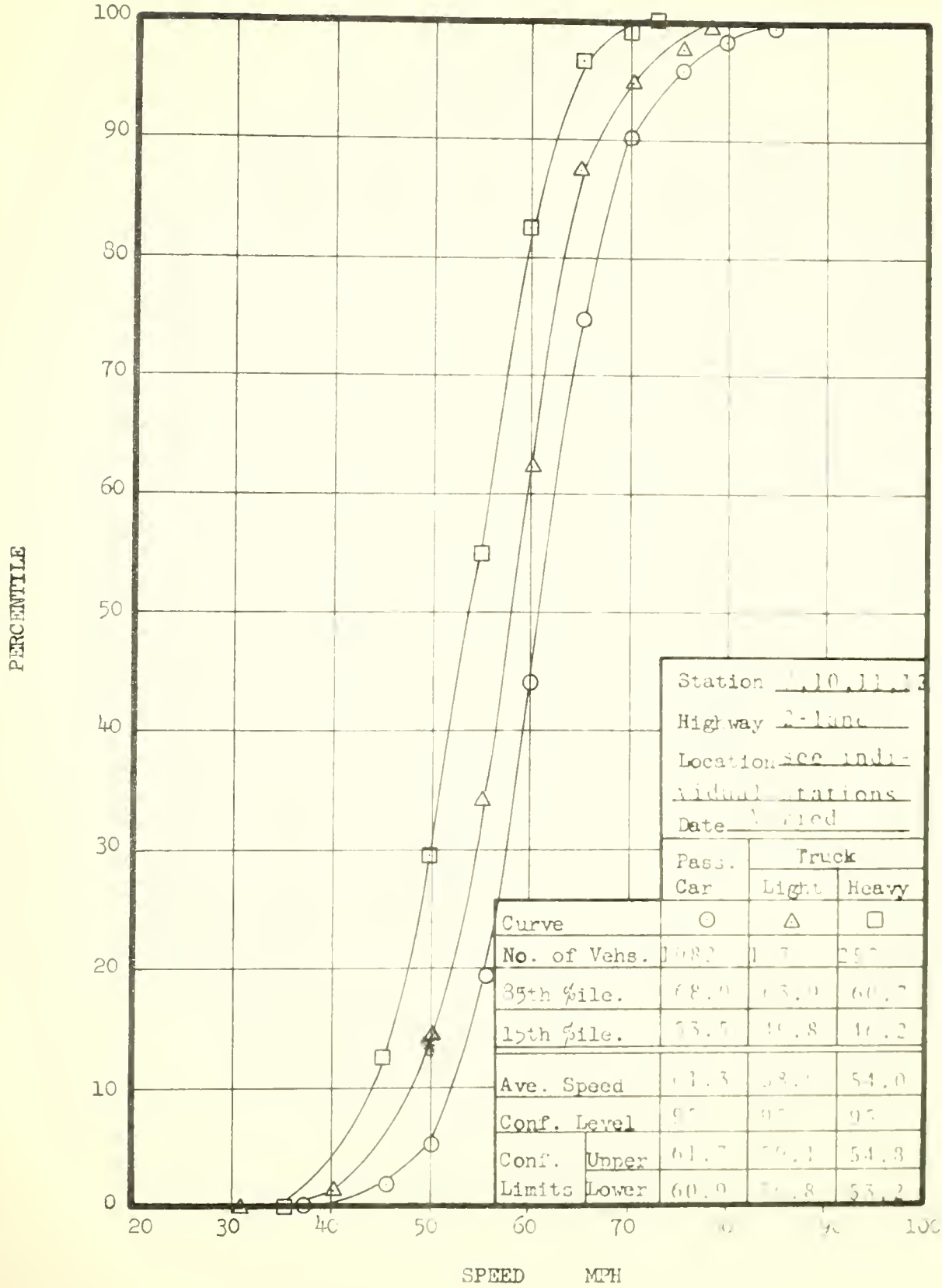

100
90
80
70
60
50
40
30
20
10
0
PERCENTILE
20
30
40
50
60
70
80
90
100
SPEED MPH
Station 10
Highway S.P. 47
Location 1.0 mi. S of Chalmers
Date July 15, 1971
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower

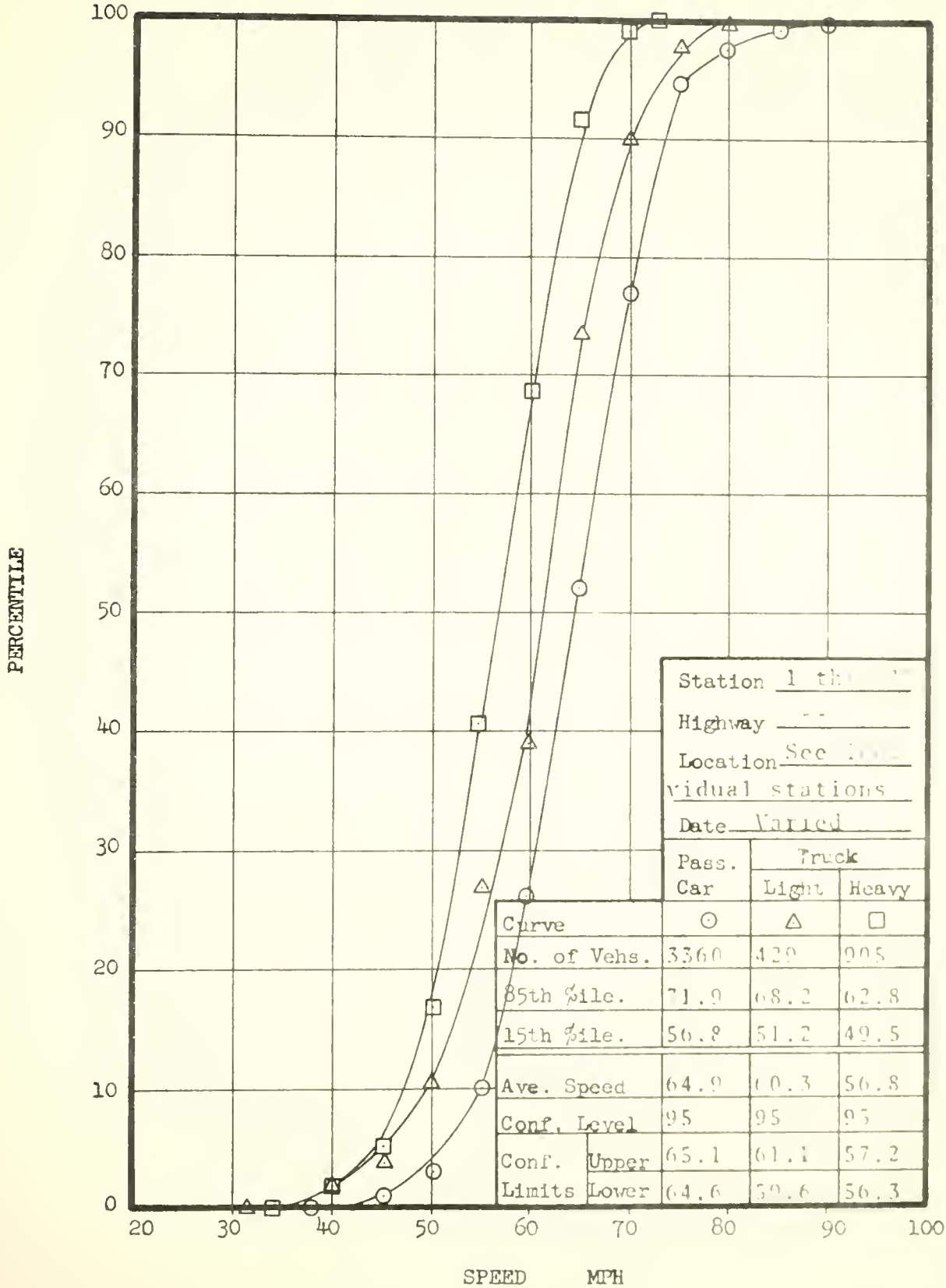

PERCENTILE
SPEED MPH
Station 11
Highway
Location
of Rochester
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th Ile.
15th Ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower


100
90
80
70
60
50
40
30
20
10
0
PERCENTILE
20
30
40
50
60
70
80
90
100
SPEED MPH
Station
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Con. Limits
Upper
Lower


100
90
80
70
60
50
40
30
20
10
0
PERCENTILE
20
30
40
50
60
70
80
90
100
SPEED MPH
Station
Highway
Location
Date
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th Pile.
15th Pile.
Avg. Speed
Conf. Level
Con. Limits
Upper
Lower


PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
SPEED MPH
Station 5, 6, 7, 8
Highway 4-lane
Location See individual stations
Date Varied
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs. 1147 141 328
85th %ile. 70.7 66.8 62.0
15th %ile. 57.5 51.1 49.6
Ave. Speed 64.6 59.8 56.1
Conf. Level 95 95 95
Conf. Limits Upper 65.1 61.1 57.0
Lower 64.3 58.5 55.7


PERCENTILE
SPEED MPH
Station 1,10,11,13
Highway 2-lane
Location see individual stations
Date varied
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs.
85th %ile.
15th %ile.
Ave. Speed
Conf. Level
Conf. Limits
Upper
Lower
60.0


PERCENTILE
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
SPEED MPH
Station 1 th
Highway --
Location See
vidual stations
Date Varied
Pass. Car
Truck
Light
Heavy
Curve
No. of Vehs. 3360 429 905
85th %ile. 71.9 68.2 62.8
15th %ile. 56.8 51.2 49.5
Ave. Speed 64.9 60.3 56.8
Conf. Level 95 95 95
Conf. Limits Upper 65.1 61.1 57.2
Lower 64.6 59.6 56.3